

## ABSTRACT

Title of Thesis:                    WHICH SKILLS PREDICT SCHOOL  
   SUCCESS? SOCIOEMOTIONAL SKILLS  
   AND THE ACHIEVEMENT GAP

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This cross-sectional study examined the relations of four socioemotional skills with academic achievement among ethnic minority (e.g., Asian, Black, Latino/a, and multiethnic) and White elementary school students. Method: Participants included public school upper elementary students (N = 257; Mage = 9.71; 58% female; 10% Black, 5% Asian, 6% Latino/a, 12% multiracial; 61% White). Measures included student-reported grit, growth mindset, engagement, and emotion regulation, in addition to a student literacy achievement performance task (Test of Silent Reading Efficiency and Comprehension, TOSREC) and student reading achievement scores (Measures of Academic Progress in Reading; MAP-R). Results: Across all analyses, socioemotional skills were more related to literacy achievement for ethnic minority students than for White students. While simple regressions supported several

skills' relation to achievement for both groups of students, multiple regressions suggested that grit was the sole significant predictor of achievement, and it was only predictive of minority students' achievement. Although literacy achievement differed between the full samples of ethnic minority and White students, moderation analyses indicated that this achievement gap disappeared among high grit students. Yet, while these regression and moderation results suggested grit's unique role as a predictor, SEM analyses suggested that the magnitude of all of the socioemotional skills' prediction of achievement were more similar than different. These findings support a novel but cautious approach to research on socioemotional skills and the achievement gap: results suggest that the skills operate differently in students of different ethnicities, with grit playing a uniquely predictive role for minority students. The skills, however, may be more similar than not in the strength of their association with literacy achievement.

WHICH SKILLS PREDICT SCHOOL SUCCESS?  
SOCIOEMOTIONAL SKILLS AND THE ACHIEVEMENT GAP

by

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## Dedication

To my wonderful family: Chuck and Talia, Imma and Abba, Bubbie and Grandpa.

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## **Chapter 1: Introduction**

Many researchers have examined why students of different ethnic backgrounds have differing levels of academic achievement. Less research, however, has examined how students' socioemotional skills contribute to this "achievement gap," particularly in elementary school. Although a number of elementary schools already implement socioemotional interventions, they have not used an evidence-based system for choosing them (Cohen, 2015; Greenberg et al., 2003). This study will help practitioners understand which well-established and recently popular socioemotional skills are most relevant for success among minority and White students.

Socioemotional approaches to closing the achievement gap may be important for several reasons. First, the limited research in this area suggests that socioemotional interventions may close the achievement gap between students (Cohen, Garcia, Purdie-Vaughns, Apfel, & Brzustoski, 2009; Dweck, 2008; Evans & Rosenbaum, 2008). Second, schools have the power to shape students' socioemotional learning, whereas other contributors to the gap are more challenging to change (Farrington et al., 2012) like family income or native language (Ramirez & Carpenter, 2005; Viadero & Johnston, 2000). Yet, while socioemotional skills are linked to academic success in the wider population (Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011), there is little research backing their unique roles in diverse populations. To develop culturally-specific programs that close the achievement gap, schools need to know which skills are most related to achievement

overall, and which skills are related to success for ethnic minority versus White students. The current study addresses this need.

### **Proposed Study**

This is a cross-sectional exploratory study that examines the relationship of four socioemotional skills with academic achievement among minority and White students. We focus on the four socioemotional skills of engagement, growth mindset, grit, and mindful emotion regulation because they represent motivation-driven skills that are empirically linked to academic performance. While discussion around the achievement gap and socioemotional skills is not new, the current study provides a fresh approach by comparing the predictive power of the skills to one another, and examining whether their predictive power to literacy achievement differs for ethnic minority versus White groups. Two questions guide the study:

1. Which socioemotional skills best predict literacy achievement in elementary school, for students overall? (See Figures 2 and 3.) I expect that socioemotional skills will differ in the strength by which they predict literacy achievement.
2. What skills are the strongest predictors of achievement among minority and White students? (See Figures 2, 3, and 4.) I expect that different skills will be stronger predictors of literacy achievement for ethnic minority versus White groups.

While one should not assume monolithic minority processes, there is a need to look at ethnic minority students as a whole in this study given the small *n* in each ethnic minority group (see Table 1 for the small number of students in each

demographic group). The study ultimately aims to identify culturally specific and relevant socioemotional skills to target in closing school-level achievement gaps. This clarification may be especially useful at the current time, when socioemotional curricula are often driven by fads and short-lived media frenzy (Cohen, 2015). The results of this study will reveal if and which skills predict success in elementary school literacy, for students at large and for ethnic minority students in particular. It may provide a useful framework for evaluating the relevance of socioemotional skills among diverse elementary school children.

## **Chapter 2: Literature Review**

Educators have tried many ways of closing the ethnic achievement gap, a trend that results in a loss of opportunities for individuals and segregates society. While these approaches have helped to some extent, none of them have managed to close the gap on wide scale. A different approach is now gaining traction; educators and scholars are considering how one's socioemotional skills may mitigate the achievement gap. Yet, associations between socioemotional skills and the achievement gap have not yet been studied thoroughly. In the first part of this literature review, I will use ecological theory to describe how socioemotional skills may diminish achievement gaps across ethnic groups. In the second part, I will summarize how current research fails to explain which specific socioemotional skills contribute to the gap. In the third part, I justify studying four socioemotional skills to address this thesis's questions. Finally, to establish what research needs to be done, I will review the literature on these four, specific skills and their link to the achievement gap.

### **Part 1: A Socioemotional Approach to the Achievement Gap**

**The achievement gap's current state.** The "achievement gap" describes the disparity in academic achievement outcomes between students of different racial, ethnic, economic, or gender groups. The ethnic achievement gap, in particular, first gained attention in the 1960's (Coleman, 1966) and narrowing the gap has been a primary concern ever since (e.g., National Education Association, 2005).

Nonetheless, ethnic disparities in achievement remain (Hemphill & Vanneman, 2011;

Vanneman, Hamilton, Anderson, & Rahman, 2009), particularly in core subjects like reading (Hemphill & Vanneman, 2011; Vanneman et al., 2009). Below I provide some background on past approaches to remedying the gap, as a prelude to my explanation of why socioemotional skills present a promising opportunity. For a visual illustration of these ideas, please see Figure 1.

While there is general agreement about the existence of an achievement gap, experts first disagree on the age groups that merit intervention (e.g., “early intervention” may mean Pre-K or middle school: Balfanz, Herzog, & Mac Iver, 2007; Heckman & Masterov, 2007). Less research focuses on the gap in elementary school, with preschool and secondary education receiving the lion’s share of research. Yet, reducing the gap in elementary school may be especially important, as success in these early grades shapes students’ later academic trajectories (Hernandez, 2011), though high school (Bruce, Bridgeland, Fox, & Balfanz, 2011) and beyond (Heckman & Masterov, 2007; Price, 2015). In fact, “for many students, the process [of low achievement and dropping out] begins in early elementary school” (Rumberger & Rotermund, 2012, p. 508). Rumberger and Rotermund (2012) explain that a number of studies that followed students through primary and secondary school found that a student’s early academic performance was a clear “early indicator” of finishing high school. By attending to the gap early in elementary school (Annie E. Casey Foundation, 2010; Hernandez, 2011), schools may mitigate achievement problems later on (Bridgeland, Dilulio Jr, & Balfanz, 2009; Bruce et al., 2011).

Second, there are a number of known “structural barriers” that contribute to the achievement gap, and experts disagree on how to resolve them. One such barrier

is the economic gap between students (Entwisle, Alexander, & Olson, 2005). Poverty contributes to a host of daily barriers to achievement, including inadequate nourishment, healthcare, family mobility, and transportation to school (Viadero & Johnston, 2000), which are intervened upon (and possibly ameliorated somewhat) by federal and state efforts such as Free and Reduced Lunch programs (Leos-Urbel, Schwartz, Weinstein, & Corcoran, 2013). Researchers also point to the lower-quality schools, fewer educational opportunities, and low teacher expectations that are more common in poor, primarily minority neighborhoods (Orfield & Lee, 2005), a trend which, despite great efforts, has been difficult to reverse. In fact, efforts at reversing these trends have had unintended consequences; measuring and controlling school quality have fed a hyper-focus on standardized tests, student scores, and whether teachers meet accountability standards (National Education Association, 2005).

Cultural differences may also contribute to the achievement gap. These include differences in students' home language, values around child development and schooling, and academic support from parents (Pew Center, 2015b). Approaches to changing these contributors to the gap often fall into one of two categories: attempts at changing the *school* and their culture around education, or attempts at changing the *family's* culture around education. Both of these approaches have received much pushback (Dudley-Marling & Lucas, 2009; Duncan & Murnane, 2016; National Education Association, 2005) and executing them on a broader scale poses challenges in the near term (Duncan & Murnane, 2014).

Moreover, while economic, neighborhood, and cultural differences explain some of the variance in achievement scores between student groups, they do not



explain it all (Entwisle et al., 2005; Hernandez, 2011; National Education Association, 2005). Perhaps because each contributor to the gap is both difficult to solve and only one of many contributors, the many prior efforts have been successful at raising student achievement (Klein, 2016) but they have not managed to close the achievement gap (National Education Association, 2005). Below I will explain how an ecological approach of focusing on socioemotional skills might offer a more effective approach to closing the achievement gap.

### **Ecological theory and the achievement gap: Context and person forces.**

This study uses an ecological model (Bronfenbrenner, 1977; Bronfenbrenner & Morris, 2006) for understanding the achievement gap and the protective role of socioemotional learning. To understand student achievement, one must consider ecological effects, or the social factors shaping student's development (Bronfenbrenner, 1977). There are two components of Bronfenbrenner's model that are pertinent for the present research study: first, Context (often referred to as "nested systems," or micro and macro factors) includes both the "immediate and more remote" environmental factors that shape development (Bronfenbrenner & Morris, 2006, p. 795). Immediate contextual factors include dynamics with friends and teachers at school, which impact students directly (Bronfenbrenner & Evans, 2000; Ryff, Magee, Kling, & Wing, 1999); remote factors include cultural values, community social structure, and ideologies, which all have a removed but powerful influence on students (Bronfenbrenner, 1977; Cole, 1995; Ryff et al., 1999). For the current study, it is crucial to note that ethnicity pervades both immediate and remote (i.e., micro and macro) spheres of influence (Steinberg, Darling, & Fletcher, 1995).

“No process occurs outside of context” (Steinberg, et al., 1995, pp. 424), and the current study uses Bronfenbrenner’s approach to understand ethnicity as a pervasive influence in students’ lives and school achievement.

*Person* factors are a second major component of Bronfenbrenner’s model, and they explain the current study’s focus on socioemotional factors. Person-level factors are individual characteristics that shape people’s development. A specific class of Person-factors, “forces,” embodies socioemotional skills, such as engagement, self-regulation, and pursuit of long term goals (Bronfenbrenner & Morris, 2006). Like Context, Person forces are “precursors and producers” of later outcomes like achievement in school (Bronfenbrenner & Morris, 2006, pp. 810). Moreover, the influence of different Person forces varies by Contextual factors like ethnicity (Steinberg, et al., 1995).

Context (both macro and micro) and Person factors are closely intertwined and interactive (Bronfenbrenner & Morris, 2006); the relationship between socioemotional skills and academic behaviors may therefore vary for different ethnic groups (Steinberg, et al., 1995). Guided by the ecological model, the current study’s primary questions include: What skills are the strongest predictors for student achievement overall, and do the strength of these predictors vary among different ethnic/racial groups? Most crucially, the relationship between socioemotional learning and achievement may not be “one size fits all.” Contextual factors like ethnicity (Bronfenbrenner, 1979) may shape the relevance of certain socioemotional skills for achievement (Bronfenbrenner & Morris, 2006; exhibited in Cohen, et al., 2009).

**Turning to socioemotional skills with support from the ecological model.** In light of the structural barriers that contribute to the achievement gap, it is encouraging to note that some ecological factors may be easier to change (Cicchetti, Toth, & Maughan, 2000). In particular, Bronfenbrenner explains that micro-level learning and person factors may be “a key” to remedying macro-level problems like the achievement gap (1979, page 225). “Person forces,” or socioemotional skills, are particularly malleable and relevant for school achievement (e.g., Blackwell, Trzesniewski, & Dweck, 2007; Farrington et al., 2012). They may serve as a “counterweight” against other contributors to the achievement gap (Steele, Spencer, & Aronson, 2002).

In this study, socioemotional skills are defined as “the knowledge, attitudes, and skills” (CASEL, 2015, p. 1) needed to understand and manage emotions and behavior in a social context (Parke & Clarke-Stewart, 2010). Unlike many other contributors of the gap, such as family income or native language (Freeman & Freeman, 2002; Ramirez & Carpenter, 2005; Viadero & Johnston, 2000), schools have the potential to shape students’ socioemotional learning (Farrington, et al., 2012). A multitude of interventions targeting them have quickly closed achievement gaps among students (e.g., Cohen, Garcia, Apfel, & Master, 2006; Yeager & Walton, 2011). Overall, socioemotional learning presents an opportunity to shape Person factors like achievement for better outcomes (Becker & Luthar, 2002; Rumberger & Rotermund, 2012), and it may serve as an important tool for narrowing the achievement gap.

Indeed, schools are now seizing the opportunity to address the achievement gap with socioemotional measures and interventions (e.g., Duckworth & Yeager, 2015; National Education Association, 2005); the approach has gained such traction that the National Association of Education Progress (NAEP) and the Program for International Student Assessment (PISA) intend to measure socioemotional skills in future tests (Kamenetz, 2016), and the Every Student Succeeds Act (ESSA) proposes that schools will be judged on one socioemotional criteria (S.1177, 2015).

**What research is needed?** While research suggests that schools help students achieve the best outcomes by undertaking academic and social development as co-equal objectives (Entwistle et al., 2005; Lee, Smith, Perry, & Smylie, 1999; Millenky, Bloom, Muller-Ravett, & Broadus, 2012), the evidence for using specific socioemotional skills to address the achievement gap is far from complete (Duckworth & Yeager, 2015). One area of improvement is that the field holds a monolithic assumption (Arnett, 2008; Henrich, Heine, & Norenzayan, 2010) about what socioemotional strengths lead to achievement. Specifically, while there is an empirical link between some socioemotional skills and achievement, there is not an explanation of which specific skills are most predictive of achievement, and for whom these links exist.

**Research for minority students.** A great deal of socioemotional research is conducted among ethnic majority students (Arnett, 2008), operating on the assumption (Allik & McCrae, 2004) that the same sets of skills are equally predictive of achievement among minority students. Like much of psychology research, socioemotional research often aggregates everyone into one model by using “standard

subjects” and drawing broader inferences about humanity (Henrich et al., 2010). This approach operates under the assumption that diverse populations follow the same patterns as their convenient sample (Arnett, 2008; Henrich et al., 2010), but evidence suggests they do not (Helms, 1984; Henrich et al., 2010; Sciarra & Seirup, 2008; Taylor, Lopez, Martínez, & Velasco, 2012). In determining which socioemotional skills are relevant for diverse school populations and the achievement gap, it is worth testing this assumption by assessing which skills are most predictive of academic achievement, and for whom.

A culture specific approach in social-educational research is important for several reasons: (a) socioemotional skills are context dependent (Cook, Purdie-Vaughns, Garcia, & Cohen, 2012; Helms, 1984; Lewin, 1947; Yeager & Walton, 2011); (b) students of different ethnic backgrounds experience different life contexts (Helms, 1984; Pew Center, 2015b), challenges (e.g., English as a second language; National Center for Education Statistics, 2010), likelihood of immigration (Homeland Security, 2014), discrimination (Cook et al., 2012), and poverty (Pew Center, 2015a), (c) students of different ethnicities and cultures may have different motivations for working in school (McCombs & Pope, 1994; Pew Center, 2015b; Taylor et al., 2012); and finally, (d) schools often aim to implement socioemotional interventions with the least studied populations: minority students caught in the achievement gap (Cohen, 2015; Farrington et al., 2012; Yeager, Walton, & Cohen, 2013). We must test assumptions about the relevance of different socioemotional skills for different students to understand what works best, and for whom.

An increasing body of research is testing this assumption by using ethnically diverse samples; Research conducted primarily among ethnic minority students suggests that, like for White students, some socioemotional skills are associated with increases in achievement (Price, 2015; West et al., 2016). Yet, the literature would benefit if such studies did a systematic comparison of socioemotional skills and achievement relations (Zins, Bloodworth, Weissberg, & Walberg, 2007) across ethnic groups (Arnett, 2008; Henrich et al., 2010) to determine whether the connection between socioemotional skills and achievement is equally strong for all students. To truly speak to the achievement gap, the study design needs to have both ethnic minority and majority students in it, and do systematic model testing and comparison across both groups.

A small number of studies have samples meet these criteria (e.g., Aber, Brown, & Jones, 2003; Li & Lerner, 2011), and while they only look at one skill rather than comparing several, their design allows for a systematic comparison of the link between socioemotional skills and achievement across ethnic groups. Most of these studies test socioemotional skills that are specific to minority groups, such as stereotype threat (Cohen et al., 2009; Good, Aronson, & Inzlicht, 2003), rather than broader socioemotional skills that are typically taught in schools.

**Gaps in research that compares the skills' relations with school achievement.** Ample research demonstrates that socioemotional skills predict better outcomes for students (e.g., Eskreis-Winkler, Shulman, Beal, & Duckworth, 2014; Heckman, Pinto, & Savelyev, 2012; Lee et al., 1999; Zins, Bloodworth, Weissberg, & Walberg, 2007), including formal measures of achievement like GPA (Valiente,

Lemery-Chalfant, Swanson, & Reiser, 2008) standardized test scores (Dweck, 2008), and teacher ratings of achievement (Caprara, Barbaranelli, Pastorelli, Bandura, & Zimbardo, 2000). Yet, the research provides little unanimity on which sets of skills to cultivate, leading schools to choose skills in haphazard or media-driven (Cohen, 2015; Elias, 2009; Greenberg et al., 2003).

In a review of current socioemotional research, Zins et al. write: “Social and emotional learning has a critical role in improving children’s academic performance... [However,] One problem with current efforts to promote social and emotional learning is that they are quite often fragmented” (p.191-193, 2007). In other words, researchers often take a specialized approach to one skill at a time, rather than a holistic approach that considers and compares many skills in relation to one another. Even in large-scale reviews of socioemotional skills (e.g., CASEL, 2013; Chien, Harbin, Goldhagen, Lippman, & Walker, 2012; Farrington et al., 2012), several skills are touted as the most relevant for academic learning but there is no systematic comparison to suggest *which* sets of skills are most predictive, and for whom.

In this vein, a meta-analysis of over 200 school-based programs documented the connection between promoting broad socioemotional learning and students’ significantly improved performance on standardized tests (Durlak et al., 2011). Perhaps because the authors’ research questions did not require it, multiple skills were not compared in these studies (Zins et al., 2007) nor was there information on students’ ethnic group, meaning the study did could not *isolate* the skills most relevant for narrowing the achievement gap. Yet, Durlak and colleagues’ findings

provide strong motivation for understanding which socioemotional skills are most relevant, and for whom the different skills work best. To the best of my knowledge, no study fulfills this need by comparing multiple skills' relation to achievement *and* examining their relevance for minority and White students.

This question is especially important for understanding literacy achievement, as literacy is foundational to most subject areas (ACT, 2006) and is crucial for closing the achievement gap (Hernandez, 2011). In some studies, the relation between literacy achievement and socioemotional skills holds even after accounting for prior achievement (Meece, Wigfield, & Eccles, 1990; Stewart, 2015), a more stringent approach to measuring socioemotional skills' relations. Yet, as described below, this thesis aims to clarify *which* skills are most predictive of academic success, and for whom.

In sum, while many studies draw inferences to the achievement gap, they do not compare several skills and whether their predictive relations with achievement vary for different ethnic groups. To have an effect, the skills must be meaningful to diverse students and fit within their life context (Helms, 1984; Yeager & Walton, 2011). Application of socioemotional research to schools' diverse populations (and efforts at narrowing the achievement gap) requires looking beyond a "white model" and toward the skills' cultural relevance for different students. As described above, experiences and values vary by demographic group; to identify relevant socioemotional factors to target in closing the achievement gap, the relative predictive power of grit, growth mindset, engagement, and emotion regulation must be tested among different demographic groups. My thesis will contribute to culture-specific



research by examining the predictive strength of different skills for students' literacy achievement.

### **Part 3: Selecting Four Skills for Study Under the Umbrella of Motivation**

#### **Theory**

In this study, I use motivation theory as a rationale for selecting a set of socioemotional skills. There are many socioemotional skills available for study (Farrington et al., 2012), but a number of them share the core similarity of supporting goal-directed effort (CASEL, 2013; Durlak et al., 2011; Pintrich, 2000). Motivation-based skills may be of the greatest interest to schools for several reasons. They are crucial for self-regulation behaviors (Pintrich, 2000b), are malleable (e.g., Blackwell, et al., 2007), predict school achievement (e.g., Caprara et al., 2000), and may be the most efficient means of behavioral change (Lewin, 1951; Yeager & Walton, 2011).

In the current study, I test the four goal-directed skills of engagement, growth mindset, grit, and mindful emotion regulation. While these skills differ from each other in some ways, they all enable goal-directed activity through their grounding in motivational processes (e.g., Pintrich, 2000b). In the next couple paragraphs, I give a general overview of how engagement, growth mindset, grit, and emotion regulation are related to motivation.

In the theoretical literature, *Engagement* is described as the emotional and behavioral manifestation of motivation (Skinner, Kindermann, & Furrer, 2009). As Christenson, Reschly, & Wylie explain in their Handbook on Student Engagement, “motivation is intent, and engagement is action” (2012, pp. 814). It is a long-studied skill that acts as a positive force in learning (Christenson, Reschly, & Wylie, 2012),

propelling children toward their goals and promoting academic behavior (Skinner & Belmont, 1993).

Next, *growth mindset* (and its opposite, fixed mindset) first developed from the motivation research on the effects of mastery versus performance goals on students' learning behaviors (Dweck & Leggett, 1988). In fact, before the term "growth mindset" took hold, Dweck and colleagues called the scales "Student Motivation Measures" (Blackwell, et al., 2007). Growth mindsets' relation to motivation may be reciprocal: just as students' school motivation – specifically their achievement goals – influence their mindsets, the reverse may also be true (Blackwell et al, 2007; Pintrich, 2000a). One study, however, suggested that the relationship between motivation mindset is unidirectional. The longitudinal, cross-lagged study found that while motivation predicted high school students' later mindsets about school, mindsets did not predict later motivation (Martin, 2015).

Unlike engagement and growth mindset, the next two constructs – grit and mindful emotion regulation – were not originally described under the theoretical umbrella of motivation. However, some theorists support motivation as a construct underlying these skills (e.g., Duckworth & Eskreis-Winkler, 2013; Duckworth, 2016; Eisenberg et al., 1997; Pintrich, 2000), even though their external behaviors are sometimes categorized as self-regulation.

*Grit* originated in the field of personality research and is defined as "perseverance and passion for long-term goals" (Duckworth, Peterson, Matthews, & Kelly, 2007). From a socioemotional perspective, grit may be explained best through the motivation framework of hierarchical goal theory, in which self-regulated

behaviors are fueled by higher-order, passionate goals (Duckworth & Gross, 2014), although it is also possible that higher grit contributes to more motivation (Von Culin, Tsukayama, & Duckworth, 2014).

Some instinctively house grit under the category self-control (Duckworth, 2016); in response, Duckworth has since described grit as “related but distinct” from self-control (Duckworth & Gross, 2014, p. 5). Rather, grit’s conceptual uniqueness stems from its position in a motivational framework (specifically a “hierarchical goal framework”) in which grit derives from higher order, passion-driven goals (Duckworth & Gross, 2014). The most recent publications on grit are more explicit about a motivation-based framework for grit. Grit is not only the “passionate” pursuit of goals (Duckworth & Quinn, 2009), but it also develops in environments of “challenge *and* motivation” (Larson, Moneta, Richards, & Wilson, 2002 as described in Duckworth, 2016 pp. 316); it consistently “goes together” with other motivation-based constructs like growth mindset (Duckworth, 2016, p. 181; Duckworth & Eskreis-Winkler, 2013) and engagement (Von Culin et al., 2014); and ultimately, “nobody works doggedly on something they don’t find intrinsically interesting” (Duckworth, 2016, pp. 106).

*Emotion regulation* is presented through several theoretical lenses, whether through a functionalist approach, (e.g., O’Neal & Magai, 2005; Niedenthal & Brauer, 2012; Tomkins, 1991), as a component of self-regulation (Baumeister & Vohs, 2003; Pintrich, 2000b), as a precursor to the emotion-generative process (Gross, 2002), or a mechanism for achieving motivation-driven goals (Bandura & Cervone, 1983;

Eisenberg et al., 1997; Pekrun, Goetz, Titz, & Perry, 2002). In the current study, I view emotion regulation through the latter, motivation framework.

From the motivation-based approach, emotion regulation is “the ability to inhibit, enhance, maintain, and modulate emotional arousal *to accomplish one’s goals*” (Eisenberg et al., 1997, p. 642). Some postulate that this is especially true of “activating” (Pekrun, Goetz, Titz, & Perry, 2002), “hot” emotions like anger (Brock et al., 2009), which energize people to overcome obstacles to achieve goals (Bandura & Cervone, 1983). In school, children’s academic motivations correlate with students’ emotions about school and their self-regulation strategies (Pekrun et al., 2002). The same environmental events may elicit different regulation strategies depending on their “goals and strivings” (Campos, Campos, & Barrett, 1989).

Growth mindset (Good et al., 2003), emotion regulation (Jones, Brown, & Aber, 2011), grit (Rojas, Reser, Usher, & Toland, 2012), and engagement (Li & Lerner, 2011) compete with one another as important skills for schools to teach (Farrington et al., 2012; Snipes, Fancsali, & Stoker, 2012) and for narrowing the achievement gap; it is therefore worth exploring the predictive strength of these skills to one another. While some studies compare the predictive strength of two of these skills at a time (e.g., Napora, 2013; Rojas & Usher, 2012), no study has systematically compared the relations of multiple skills with formal measures of achievement, neither for students at large, nor by subgroup.

#### **Part 4: The Skills’ Link to Achievement and the Achievement Gap**

In this final section of this literature review, I briefly review the existing literature on engagement, growth mindset, grit, and mindful emotion regulation. The

review addresses (a) the studies used to establish these factors, their theoretical bases, and how they fall under the theoretical umbrella of motivation, (b) how they are associated with achievement, and (c) ethnic or culture-specific research on these factors.

### **Engagement.**

***Definition and theory.*** Student engagement reflects both psychological and behavioral activities: their emotions about school, their beliefs about its importance, and the resulting behavioral participation (Finn & Zimmer, 2012; Willms, 2003). While engagement has many facets, the current study uses a scale that measures students' emotional engagement specifically.

Even in everyday school activities (Chapman, 2003), emotionally engaged students “show generally positive emotions during ongoing action, including enthusiasm, optimism, curiosity, and interest” (Skinner & Belmont, 1993, pp. 572). They are motivated by the process of learning itself and “make a psychological investment in learning... They take pride not simply in earning the formal indicators of success (i.e., grades), but in understanding the material and incorporating or internalizing it in their lives” (Lamborn, Newmann, & Wehlage, 1992, pp. 11–39). Conversely, student *disengagement* reflects a withdrawal from school activities (such as poor attendance or work completion), the belief that school is irrelevant to “real” life, and a passive or angry attitude toward school activities (Assor, Kaplan, & Roth, 2002; Balfanz et al., 2007; Rumberger & Rotermund, 2012).

In this vein, engagement resembles another construct under the umbrella of motivation: grit. Engaged students “select tasks at the border of their competencies;

they exert intense effort and concentration in the implementation of learning tasks” (Skinner & Belmont, 1993, pp. 572). It is no wonder that engagement holds a moderate correlation with grit, specifically the subscale measuring “perseverance of effort” (Von Culin et al., 2014).

***Engagement and achievement.*** Research consistently suggests that engagement relates to achievement (Finn & Zimmer, 2012), especially in foundational subjects like reading (Guthrie, McRae, & Klauda, 2007). Engaged readers have “wants and intentions” about reading; they do not simply read because they can or should, but because they are “motivated to” (Guthrie and Wigfield, 2000). Just as high levels of engagement relate to stronger academic achievement, generally (Ladd & Dinella, 2009), reading-specific engagement is linked to students’ improved literacy over time (Guthrie & Wigfield, 2000).

It is important to note that literacy motivation impacts some students more than others. Recent literature suggests that motivation and engagement play different roles for readers of different aptitudes. Specifically, motivation and engagement may be most important for low-ability readers. When these struggling students receive the same assignment as the rest of the class, they will experience more difficulty completing the task. Motivation and engagement may be most influential for these struggling students; “Intrinsic motivation is thought to act as an energizer which affects children’s effort and persistence” and helps them perform despite their lower ability (Logan, Medford, & Hughes, 2011).

Similarly, engagement may be especially important for students who are behind grade level or at-risk of school failure and drop-out (Balfanz et al., 2007;

Rumberger & Rotermund, 2012). For these students, trusting and fond relationships with adults are the most critical components of engagement. Many at-risk students have limited positive interaction with other adults, especially pertaining to school; a connection to their teacher or another caring adult at school helps them engage in the behaviors crucial for school success, like asking questions, giving feedback, and attending class (McCombs & Pope, 1994). Considering the evidence of a literacy gap between ethnic majority and minority students (e.g., Grigg, Daane, Jin, & Campbell, 2003), it is important to test if engagement is a strong socioemotional predictor of achievement across all students.

***Engagement among diverse populations.*** Engagement's link to ethnic minority students' literacy is equivocal; one research camp emphasizes its importance for minority students and the other questions it. In the predominant approach, engagement is linked to literacy achievement in elementary-aged, poor, and ethnic minority student populations (Guthrie et al., 2007; Schiefele, Schaffner, Möller, & Wigfield, 2012; Taboada, Tonks, Wigfield, & Guthrie, 2009; Wigfield & Wentzel, 2007), particularly when both emotional and behavioral engagement are considered (e.g., Rumberger & Rotermund, 2012). These factors may extend far beyond reading literacy alone. Studies with diverse groups of elementary school students show that behavioral engagement, especially, mediates the connection between classroom factors (e.g., teacher-student relationships) and academic achievement in a variety of subjects (Dotterer & Lowe, 2011; Downer, Rimm-Kaufman, & Pianta, 2007). In some circles, engagement is, therefore, considered a socioemotional skill with far-reaching effects across diverse students.

Some research supports engagement as a crucial socioemotional skill for understanding and closing the achievement gap. Li and Lerner (2011), for example, found that trajectories of emotional and behavioral engagement were less favorable for youth of color, and that their decreasing engagement trajectories were significantly linked to a decrease in school grades. Two other studies found similar results, in which African American students' middle school engagement predicted achievement in high school, and disengagement was considered a risk factor (e.g., (Balfanz et al., 2007; Irvin, 2012).

Yet, other research yields conflicted findings: It suggests that emotional engagement predicts European American students' achievement, but it fails to predict minority students' achievement. Voelkl (1997) examined ethnic differences in adolescent students' emotional engagement, and found that engagement was correlated with prior achievement for European American students but not for African American students. Similarly, Sciarra and Seirup (2008) found that emotional engagement was only predictive of later high school math achievement for European American and Hispanic students, and not for African American, American Indian, or Asian students. Overall, the authors conclude, "many other factors explain...achievement besides school engagement." Such findings suggest that in studies that include both European American students and students of color, engagement is particularly valuable for the European American students but not for the minority students. This type of research has not been done among elementary school students, but the findings question engagement's value in closing the ethnic achievement gap in elementary school.



Despite the uncertainty, engagement (and its converse, disengagement) is commonly touted as a linchpin of the achievement gap, in both academic circles and educational media (Bridgeland et al., 2009; Koughan, 2012). The literature would benefit from a study that more closely examines engagement's relation with elementary school achievement, with a particular focus on the unique relations for minority versus White students.

### **Growth Mindset.**

**Definition and theory.** Growth mindset is a term used to capture individuals' implicit belief that one's abilities can change with effort (Blackwell, Trzesniewski, & Dweck, 2007). Specifically, people view intelligence and learning in one of two ways: Those with a *fixed mindset* view their abilities as predetermined – their ability is fixed, “and that’s that” (Dweck, 2010). Those with a *growth mindset*, on the other hand, believe they can improve their abilities with time and effort (Blackwell et al., 2007; Dweck, 2010). Fixed mindsets correlate with “performance goals,” or goals for which one receives externally motivated rewards (e.g., praise, respect, or money). Conversely, a growth mindset correlates with “mastery goals,” in which one's mastery of the task is intrinsically motivating (Dweck & Leggett, 1988; Pintrich, 2000a). As a result, those with a growth mindset engage more deeply with their work and experience a thrill from learning (Elliott & Dweck, 1988).

Students' motivation and achievement goals are manifest in their “mastery orientation” toward learning, a central component of growth mindset (Chien et al., 2012). The growth mindset subscale chosen for the current study specifically examines students' “helpless versus mastery orientation” (Blackwell, et al., 2007),

and how their mindsets are tied to their attributions of failure (e.g., their explanations for a poor grade in school) (Hong, Chiu, Dweck, Lin, & Wan, 1999). Students with a fixed mindset tend to attribute their failure to a lack of ability. This fixed perspective correlates with a maladaptive, external locus of control, feelings of helplessness or disinterest after experiencing failure, and superficial means of success such as complaining to the teacher after receiving a poor grade (Chien et al., 2012; Hong et al., 1999). Those with a growth mindset, on the other hand, attribute their failure to changeable circumstances – such as a lack of studying. They therefore seek solutions that strengthen their skills so they can achieve success in the future (Blackwell et al., 2007; Hong et al., 1999).

***Growth mindset and achievement.*** As explained above, growth mindsets relate to students' motivations and beliefs about overcoming challenge; the mindsets, therefore, predict students' approach to school and the grades they earn (Blackwell et al., 2007). Students with fixed mindsets “become excessively concerned with how smart they are, seeking tasks that will prove their intelligence and avoiding ones that might not,” writes Dweck. “The desire to learn takes a backseat” and they seek out easier class material (Dweck, 2007, p. 1). Conversely, students with a high growth mindset focus on developing their intelligence, rather than concerning themselves with others' approval (Dweck, 2007). Those who believe that their abilities can improve with practice thrive in the face of challenge; they seek it out in their schoolwork, thereby expanding their academic abilities. Others feel threatened or defeated by challenge and try to avoid it (Dweck & Legget, 1988; Mueller & Dweck, 1998), ultimately performing worse on academic measures. Those with a higher

growth mindset earn higher scores on standardized tests in middle school-level math and English (Good et al., 2003; West et al., 2016). The correlations between mindsets and achievement are evident from middle school to college (Blackwell et al., 2007; Dweck, 2008; Good et al., 2003), although the relation between growth mindset and formal measures of academic achievement has not been examined among elementary school students, which is surprising given the widespread belief in the education community that growth mindset is an elixir for elementary schools students' achievement.

Yet, research that is related to growth mindset may be especially important in the current study's elementary-school aged group. An early study on mastery versus performance goals found that a shift occurs as children transition to middle school; while students are naturally inclined toward mastery goals in elementary school, they often adopt performance goals in middle school (Midgley, Anderman, & Hicks, 1995). In their discussion of a study with middle school students, Blackwell and colleagues suggest that by explicitly teaching growth mindset in elementary school, when students and teachers are naturally receptive to the idea, educators may protect students against the "sink or swim" fixed mindset that pervades middle school (Blackwell et al., 2007). While one study examines growth mindset's relation to elementary students' persistence during an educational game (O'Rourke, Haimovitz, Ballweber, Dweck, & Popović, 2014), no research has explicitly tested growth mindsets' relations with formal measures of academic achievement. Thus, Blackwell and colleagues' suggestion of teaching growth mindset in elementary school may be premature.

The relation between growth mindset and achievement may be most pronounced in subjects where students tend to take a “fixed” perspective of their ability, such as mathematics (Dweck, 2008). A formative study by Blackwell, Trzesniewski, and Dweck (2007), followed a diverse sample of middle school students over two years during their transition to middle school; many of these students initially showed declining grades in their math classes. Students who partook in a growth mindset intervention, however, changed their trajectory and began to show significant increases in math grades. This was in contrast to the control intervention (i.e., a course on study skills), whose students’ math grades continued to go down. Moreover, teachers who were “blind” to the study’s design were asked to note any of their students who showed changes in motivation; compared to the control group, almost three times as many students in the growth mindset intervention were selected for their noteworthy increases in motivation. Conversely, when college students are reminded of “fixed” theories of intelligence (the *opposite* of growth mindset) they have *lower* motivation and expectations about their math achievement (Rattan, Good, & Dweck, 2012).

These findings are intriguing, although it is unclear whether they extend to literacy achievement among elementary school students, particularly as the vast majority of growth mindset research centers on achievement in math and science. Early growth mindset research with middle school students suggests that a growth mindset intervention improved standardized test scores in English, but that the effects were slightly larger in math (Good et al., 2003); one study did find, however, that the correlation between growth mindset and achievement was similar for English and

math in middle school (West et al., 2016). While some suggest that the research relating growth mindset to math achievement would translate to elementary school literacy (Masters, 2013), a formal examination has not been done.

***Growth mindset among diverse populations.*** Of the research on growth mindset, a good deal includes diverse samples from middle school, high school, and college. Following a growth mindset intervention, Good, Aronson, and Inzlicht (2003) found an increase in a primarily African American and Hispanic sample of middle school students' math and English standardized test scores. In another study by Aronson (2007), African American and Latina/o premedical students achieved higher scores on a standardized achievement test when the test's instructions were preceded by a description of growth mindset – specifically, the ability to improve scores with practice.

Of the studies focusing on gender achievement gaps, two include diverse groups of middle school students, primarily consisting of African American, Hispanic, and South Asian students. Their results are promising, especially in light of the questions asked in this thesis: In both of the studies, students earned better grades (Blackwell et al., 2007) and performed better on standardized tests in reading and math (Good et al., 2003) after a growth mindset intervention. The students' improved achievement suggests that growth mindset may be relevant for the ethnic achievement gap, although the studies above did not directly compare growth mindset's predictive strength for ethnic minority and White students.

Other studies have compared intervention effects between ethnic groups, an important comparison for the current thesis, but this has not been done among

elementary students, in relation to grade school literacy, or in comparing growth mindset to other socioemotional skills. The existing studies, however, are promising. In a study with African American and Caucasian college students, those who took a workshop on growth mindset earned significantly higher grades than students in control groups; there were stronger intervention effects among African American students, and it suggests that growth mindset may be an important factor in narrowing the achievement gap (Aronson, Fried, & Good, 2002). Additionally, in a review of growth mindset studies, Dweck (2008) explains that both correlation and intervention studies suggest students with a growth mindset perform better in school, and that these changes are most pronounced for non-White students; the research in this review, however, only addresses growth mindset's relation with math achievement for students in the middle grades and older.

Researchers suggest that, among older students, growth mindset's impact varies for students of different ethnicities because they face different motivational challenges. Specifically, minority students may experience more demotivating factors in school (namely, stereotype threat); they are, therefore, the most likely to benefit from pro-motivation factors like growth mindset (Steele et al., 2002). In other words, growth mindset may "counterbalance" demotivating, stereotype threat. Studies of similar constructs (e.g., goal-setting) also suggest that motivational interventions are more relevant and impactful for African American students than for European American students in middle school (e.g., Cohen et al., 2009; Walton & Cohen, 2011). Educators would benefit from more research testing growth mindset as a tool

for narrowing the achievement gap among younger students (Farrington et al., 2012), and especially for foundational literacy skills.

In light of this promising research, growth mindset's influence among elementary school students and on the ethnic achievement gap needs to be investigated. The current study will be the first to specifically consider the connection between literacy achievement and growth mindset among elementary-aged minority students, as well as the first to address the growth mindset's connection to the ethnic/racial achievement gap in elementary school.

### **Grit.**

***Definition and theory.*** Grit is defined as “passion and perseverance for long-term goals,” (Duckworth et al., 2007); it combines two important socioemotional skills – perseverance of effort and consistency of interest over time. Grit was originally postulated as a sub-facet of the personality trait conscientiousness. However, while conscientiousness and grit are both related to achievement, conscientiousness describes short-term intensity while grit describes long-term stamina. Gritty individuals tend to set long-term goals and pursue success over *years* (Duckworth et al., 2007). Their passion for a given project allows them to overcome obstacles that might deter others. People who are high in grit are able to maintain focus and effort, even in the face of negative feedback and adversity (Duckworth, 2016).

***Grit and achievement.*** Grit predicts academic success beyond intelligence or talent; those who have more grit tend to achieve more, compared to peers with similar abilities (Duckworth & Quinn, 2009). It may be a valuable predictor of older

students' academic success, as measured by their graduation from high school or college GPA (e.g., Duckworth & Quinn, 2009; Duckworth et al., 2007). Grit also predicts students' likelihood of graduating from high school, even when controlling for their prior academic achievement (via standardized achievement test scores) (Eskreis-Winkler et al., 2014).

To the best of my knowledge, however, only four studies address grit among elementary students, and the existing literature has some critiques. One such study is of elementary school and middle school-aged contestants in the National Spelling Bee. It found that grittier contestants practiced more and advanced farther through the contest (Duckworth, Kirby, Tsukayama, Berstein, & Ericsson, 2011). Yet, the subjects were unusually high achievers who had greater-than-average verbal ability; grit's relation to achievement among such unusual students should not be blithely generalized to literacy achievement among the broader population. Another study found that grit significantly contributed to elementary students' psychological well-being, although analyses did not include a measure of academic achievement (Furlong, You, Renshaw, O'Malley, & Rebelez, 2013). Likewise, in a cross-sectional study, grit was moderately correlated with elementary and middle school students' self-ratings of their ability in math and reading, but the authors did not test grit's relation with the students' actual achievement in these subjects (Rojas et al., 2012; Rojas & Usher, 2012).

Other research, however, is less glowing in its appraisal of grit. A recent study found that a large, multi-school sample of eighth grade grit was correlated with students' improvement on English language state tests between fourth and eighth



grade although, paradoxically, the findings became non-significant after examining results for students within individual schools (West et al., 2016). Another study suggested that grit loses its predictive relationship with literacy, after controlling for prior literacy (Weston et al., in preparation), potentially diminishing grit's promise as a socioemotional skill that could address the literacy achievement gap. Adjusting for prior achievement is a more stringent measure of predicting academic achievement, and it has been successfully used with other motivational constructs (e.g., Blackwell et al., 2007; Meece, Wigfield, & Eccles, 1990). Despite schools' eagerness to test for students' grit (Zernike, 2016), it is evident that more research is necessary to understand grit's functioning among elementary school students before drawing conclusions about its potential to close the achievement gap (Duckworth & Yeager, 2015).

***Grit among diverse samples.*** The grit research is mostly based on middle-class, ethnic majority populations, although there are some exceptions. In a study mentioned above, grit was measured as a predictor of diverse students' high school achievement two years later; grit successfully predicted their likelihood of graduating from high school, but it did not predict their standardized achievement test scores (Eskreis-Winkler et al., 2014). Of note for the current thesis, the study did not report whether grit's relation with achievement varied for students of different ethnicities, despite the study's use of a culturally diverse population with a troublesome achievement gap. To extend Eskreis-Winkler and colleagues' conclusions to the achievement gap, grit's relations with achievement must be systematically studied among minority and White students.

As mentioned above, the bulk of the grit research was done with older students. There is one cross-sectional study that examined grit's relations with achievement among elementary and middle school students, in which half the students self-identified as an ethnic minority. In this poster by Rojas and Usher (2012), grit was correlated with math achievement among diverse elementary and middle school students. The study, however, did not include a measure of students' literacy, and, like other studies on grit, it did not report whether grit's relations with achievement varied for students of different ethnicities. Thus, there is insufficient evidence of grit's potential in narrowing the achievement gap in grade school, despite claims to the contrary (e.g., Tough, 2012).

At the college level, a cross-sectional study found that grit was associated with self-reported grades for African American males at a predominantly White university; this was true even after controlling for factors like age, transfer status, degree aspirations, and high school achievement (Strayhorn, 2014). The author suggests that grit may, therefore, be "an effective lever for raising Black male academic success" (Strayhorn, 2014, p. 7). This research is promising, but it was not done with students of multiple ethnicities, nor with younger students caught in the achievement gap.

Grit's predictive relationship with achievement must be systematically studied among minority and White students before drawing conclusions about its relevance for the achievement gap. Some literature reviews speculate upon grit's importance for closing the achievement gap (e.g., Farrington et al., 2012; Snipes et al., 2012), but comparisons between groups have not been done. While the above studies examine

grit's relationship with achievement in school, they do not address the achievement gap itself, and more research needs to be done on grit in elementary school.

### **Emotion Regulation.**

***Definition and theory.*** Emotion regulation is a broad construct and its definitions vary widely. The current study operationalizes emotion regulation according to Compas and colleagues' (2014) definition, in which emotion regulation is "the extrinsic and intrinsic processes responsible for monitoring, evaluation, and modifying emotional reactions... to accomplish one's goals." Emotion regulation involves modulating both emotional arousal and emotional expression (Eisenberg et al., 1997; Gross, 2013); the current study primarily examines the latter component of emotional expression. Overviews of emotion regulation perspectives, strategies, and the strategies' functions are below.

Children's emotion regulation can be understood through several theoretical perspectives. Differential emotions theory and affect emotions theory (Izard, 1971; Tomkins, 1991) is an important perspective for the current study. According to this theory, people have a set of discrete, primary emotions (Ackerman, Abe, & Izard, 1998), and scholars recommend studying the regulation of a single, discrete emotion rather than positive or negative affect, generally (O'Neal & Magai, 2005; Zeman, Klimes-Dougan, Cassano, & Adrian, 2007). The current study therefore focuses on anger regulation. As opposed to "deactivating" emotions such as hopelessness or boredom, anger is an emotion that urges students to action (Pekrun et al., 2002). Anger regulation strategies are an apt point of study, as they relate to student's

internalizing and externalizing problems in school (Otterpohl, Schwinger, & Wild, 2015), their aggression and conduct issues (Mullin & Hinshaw, 2007), their social-emotional development (Mullin & Hinshaw, 2007; Otterpohl et al., 2015), and their academic achievement (Boekaerts, 1994; Pekrun, Elliot, & Maier, 2009).

Emotional expression of anger is facilitated through several classes of emotion-regulation behaviors, such as withdrawal, expression (to peers, parents, or teachers), and distraction (Magai & O’Neal, 1997). To achieve academic success, students must regulate their anger productively (Boekaerts, 1994). Productive regulation behaviors enable children to enlist others’ help in regulating their emotion (Magai & Passman, 1998; Thompson & Calkins, 1996) or to shift their attention away from the source of anger (Eisenberg & Fabes, 1992), allowing them to return to the academic task at hand (Pekrun et al., 2009); poor anger regulation behaviors, on the other hand, lead to escalated frustration, impulsivity, and aggression (Greenberg & Kusché, 2006).

Another strategy of recent interest (DeRuy, 2016) is a component of mindfulness: nonreactivity. It is “the self-regulation of attention so that it is maintained on immediate experience,” such as one’s breath, with a focus on “acceptance” of one’s emotions over impulsive action (Bishop et al., 2004, pp. 232). The literature on anger regulation suggests that mindfulness may be particularly related to the cognitive, affective, and behavioral management of anger (Wright, Day, & Howells, 2009). The current study builds on Magai and O’Neal’s research on emotion regulation behaviors by adding an additional scale of children’s nonreactive responses to anger to their existing anger regulation scales (Magai & O’Neal, 1997).

Investigation of this anger regulation strategy is especially relevant among school children, at the current time, since schools are striving to endorse mindfulness among their students with the hopes that it will address the achievement gap (DeRuy, 2016).

***Emotion Regulation and achievement.*** Research on emotion regulation's relation with academic achievement is ambivalent. In the most optimistic view, students' regulation of "their emotions and behaviors...enables them to effectively carry out solutions with others," overcome academic obstacles, and succeed in school (Zins et al., 2007, pp. 1). Some research supports this claim (e.g., Howse, Calkins, Anastopoulos, Keane, & Shelton, 2003; Pekrun et al., 2002). In one study, for example, middle school students' self-assessments of emotion regulation predicted GPA, even after controlling for other predictors of achievement like IQ (Gumora & Arsenio, 2002). In several other cross-sectional and longitudinal studies with college students, emotion regulation strategies related to students' emotions about school, their academic motivations, and their class grades (Pekrun et al., 2002), although the relationship may be multidirectional (e.g., motivations may affect emotions and regulation strategies, and visa versa).

Yet, other research suggests that self-regulation consists of many distinct but overlapping components, and the emotion regulation components fail to account for students' achievement beyond what other self-regulation components predict. For example, the "hot," or emotional components, of self-regulation failed to predict kindergarteners' achievement or learning-related behaviors after accounting for the non-emotional, "cool" cognitive components of self-regulation (e.g., focused

attention, inhibitory control during a novel task; Brock et al., 2009). A later study obtained similar results among preschool students. Hot and cool regulation each correlated with standardized achievement test scores and inattentive-disruptive behavior when considered alone; when considered together, however, cool regulation predicted achievement while hot regulation predicted inattentive or disruptive behavior (Willoughby, Kupersmidt, Voegler-Lee, & Bryant, 2011).

These trends may occur because self-regulated learning, which includes “cool” strategies such as planning, evaluating progress, and adapting learning strategies (Pintrich, 2000b), typically emerges in the face of positive emotions (Pekrun et al., 2002). Negative emotions such as anger, on the other hand, may impede achievement by reducing students’ intrinsic motivation and distracting them with task-irrelevant thinking (Pekrun et al., 2002; Pekrun et al., 2009). Yet, anger does not always predict lower achievement (Boekaerts, 1994). Anger increases the effects of extrinsic motivation (e.g., the desire to avoid failure) and facilitates other strategies; when used productively, these strategies may help students achieve in school (Pekrun et al., 2002).

Most notably among college students, negative emotions like anger may prompt a “negative feedback loop” in which an increase in the negative emotion motivates students to seek external guidance for regulating the emotion, thereby reducing the negative emotion (Pekrun et al., 2002). Researchers have produced similar findings among elementary school students by conceptualizing anger regulation strategies as “Anger In,” “Anger Out,” and “Anger Control” (which reduces the amount of children’s “Anger In” and “Anger Out”). Productive strategies,

such as “Anger Out’s” verbal expression, are positively correlated with GPA, while unproductive strategies, such as “Anger In’s” withdrawal, are negatively correlated with GPA (Boekaerts, 1994); the findings suggest that it is not anger itself that reduces academic achievement, but the emotion regulation strategies that children use (Izard, 1971; Tomkins, 1991).

There is also increasing research on mindfulness as an anger regulation strategy in school (DeRuy, 2016), including the component of nonreactivity (Christopher, Woodrich, & Tiernan, 2014), which resembles the current study’s “pause anger” measure. While the research among elementary school students only relates mindfulness to socioemotional *correlates* of achievement (e.g., self-control, classroom behavior; Black, 2015; Felver, Celis-de Hoyos, Tezanos, & Singh, 2015), two studies with college students report on mindfulness’s relation with achievement itself. In the first study, self-rated mindfulness was correlated with self-reported college GPA, and it was a better predictor of academic achievement than cognitive engagement. The nonreactivity component of mindfulness was among the sub-constructs most correlated with GPA (Napora, 2013). In the second study, mindful breathing practices significantly improved math performance among college students with math anxiety (Brunyé et al., 2013). These findings suggest that mindful emotion regulation is a promising strategy that may relate to academic achievement. The current research, however, relies heavily on undergraduate samples and does not focus on anger, despite the growing popularity of mindfulness approaches to grade-level academics and classroom behavior (DeRuy, 2016).

*Emotion regulation among diverse populations.* Ecological factors are known to impact emotion regulation's development and expression (e.g., Lemerise & Dodge, 2008; Raver, 2004), and research suggests that the way people interpret, express, and manage their emotions varies by culture (Matsumoto, Yoo, & Nakagawa, 2008). Specifically for children, the “display rules’ of when, to whom, and how to express [angry] emotions” (Lemerise & Dodge, 2008, p. 731) varies between ethnic groups. Yet, studies on the adaptiveness of different regulation strategies tend to assume monolithic processes (Arnett, 2008).

Little research addresses whether different strategies’ usefulness varies between cultures, but the advantages of different emotion regulation styles must be recognized (Gordon, 1991). This need is exemplified among children in a study of two Nepalese ethnic groups (Cole, Tamang, & Shrestha, 2006). When children’s requests were denied, parents of each group encouraged virtually opposite anger regulation among their children: one group encouraged the children’s verbal expression of anger/frustration, while the other group placed a high value on social graces, and parents were therefore most responsive to children who displayed withdrawn, ashamed behavior.

These findings extend to American populations, although none of the literature addresses academic achievement directly. On the one hand, theorists on emotion regulation posit that expressive behavior is most adaptive because it garners support from others (e.g., Magai & Passman, 1998), and the theory is supported by the literature suggesting the importance of expression in self regulation (e.g., Boekaerts, Pintrich, & Zeidner, 2005; Pekrun et al., 2002; Tomkins, 1991). On the



other hand, the etiquette for expressing oneself in anger does not extend to all students (Gordon, 1991). Children's ethnic, national, and economic cultures shape their "emotional culture" and the accepted strategies for emotional expression; this phenomenon is particularly true of anger (Gordon, 1991, pp. 319). Similarly, for children in high-stress environments, emotion regulation "entails inherent tradeoffs that make non-optimal strategies of managing emotion expectable;" in such cases, expressive behavior might not be well-accepted by adults, and withdrawn or distracted behavior may be more adaptive (Thompson & Calkins, 1996, p. 1). Conclusions about the different strategies' relation to achievement may not be entirely applicable across ethnic cultures. Moreover, solutions to the achievement gap that involve anger regulation must not assume monolithic processes. To date, however, no studies have examined ethnic differences in emotion regulation as they relate to elementary students' literacy achievement.

It is especially important to consider the anger regulation strategies of mindful nonreactivity through a culture-specific lens, because some cultures value nonreactivity more than others (e.g., Cole et al., 2006; Lemerise & Dodge, 2008). Yet, no research has examined nonreactivity's differing cultural relevance as it pertains to academic achievement. As an initial step, one research study found that the nonreactivity component of a predominant mindfulness questionnaire was culturally relevant and valid among adults of both Eastern and Western cultures (Christopher et al., 2014). Beyond a specific focus on nonreactivity, there are about a dozen studies of the broader construct of mindful emotion regulation that involve ethnically diverse samples, but they are typically small-sample studies lacking in

rigorous methodology, and none of them include direct measures of achievement; in addition, none of them compare mindfulness's relevance across different ethnic groups.

To address the achievement gap specifically, studies must include both minority and White students, do systematic model testing across both groups, and examine the skills' predictive relationship with academic achievement. Despite claims that anger regulation strategies may reduce the achievement gap (e.g., DeRuy, 2016), only one study (Aber et al., 2003) examined elementary school students' broad regulation strategies in such a way that could address the achievement gap, and it is an intervention study. The "preventative" socioemotional intervention focused on regulation strategies for aggression-related emotions, such as frustration or anger. The study found similar aggressive trajectory outcomes across all ethnic groups, suggesting the applicability of a universal emotion regulation intervention (as opposed to a culture-specific one). Yet, a follow-up report described the academic implications of the intervention; while results were not explicitly discussed by ethnicity, the intervention was more predictive of improved teacher-rated achievement and standardized literacy scores for African American children, who were identified as having greater baseline behavioral risk (Jones et al., 2011). The study is promising but it had some important limitations for the purposes of this thesis. The White sample was relatively small (less than 15% of the study population in Aber et al., 2003; less than 5% in Jones et al., 2011), the precise emotion regulation strategies were unspecified, and the predictive value of the emotion regulation strategies was not compared to other socioemotional skills. Thus, questions of which

regulation strategies are most effective, for what emotions, and for whom they are most effective, still remain.

### **Contribution to the Literature**

Research demonstrates that elementary school literacy achievement is important and that achievement gaps in elementary school merit attention (Annie E. Casey Foundation, 2010; Hernandez, 2011). Research also suggests that students benefit from a culture-specific approach to learning (Ladson-Billings, 1995) that incorporates socioemotional skills (Farrington et al., 2012; Lee et al., 1999). My study, therefore, asks two primary questions: (a) What skills are the strongest socioemotional predictors of elementary students' literacy achievement overall, and (b) Does the relevance of these predictors vary among different ethnic groups?

A review of the literature suggests that the research does not answer my study's questions. It is unclear *which* socioemotional skills are most related to achievement, and whether the links between skills and achievement are equally predictive for everyone. Four socioemotional skills – engagement, growth mindset, grit and mindful emotion regulation – claim individual relevance to the achievement gap, but their relevance is under-studied and their relations with literacy achievement have not been adequately compared to one another. To address the achievement gap, research must compare the skills' predictive relations with academic achievement, include both minority and White students, and systematically test the skills' prediction of achievement across both groups. This study's design is crafted to compare the predictive relations of these four socioemotional skills with school-level literacy achievement, first for the schools' students at large, and then for minority and

White students in particular. In doing so, I hope to explain which skills are most predictive of achievement, and for whom. Similarly, I am interested in comparing a model in which the socioemotional skills are allowed to vary in their relation to achievement to a model in which the skills are not allowed to vary in their relation to achievement, for minority and White students. Such an analysis would address the larger question of how the relationships between socioemotional skills and literacy achievement vary across groups.

### **Chapter 3: Methods**

This thesis is part of a short-term longitudinal study. The design of this thesis is cross-sectional and examines the relation between socioemotional skills and literacy achievement among minority and White students. The study methods are below.

#### **Participants**

Two hundred and sixty-six students agreed to participate in the study. However, seventeen students did not complete the complete set of measures due to school absence. The remaining 249 students were included in the analyses. These students were in third, fourth, and fifth grade and came from two suburban Maryland elementary schools who agreed to participate in my research lab's studies ( $M_{age} = 9.71$ , 56% female; 10% African American, 5% Asian, 6% Hispanic, 12% multiracial; 6% other; 61% European American).

All recruitment and study procedures were conducted according to the school district's Office of Shared Accountability and the University of Maryland's IRB. The Emotions, Equity, and Education lab recruited participants by visiting each class to explain the study and send consent forms home with the students. The lab visited twenty-seven classes in total, with approximately twenty-five students in each class. Written parental consent was required to participate; overall, 36% returned the form and participated in the study. The sample was nearly evenly split on gender and grade level (see Table 1). We could not explicitly compare students who participated to those who did not in regards to the other demographic variables, as the main reason for non-participation was failure to return the consent form (and the demographic

information therein). Yet, participating students' gender and ethnic demographics resembled that of the schools' total student body (see Tables 1 and 2).

The consent form requested children's basic demographics, such as birth date, race/ethnicity, and languages spoken at home (see Table 1 for sample demographics). While the school district did not allow us to ask families about their income level, the schools could provide school-level statistics gathered for their annual, published "School Facts at a Glance," which summarizes school information collected for MSDE's Maryland Report Card site. The schools reported that, on average, 14% of their students received free and reduced meals (FARMS). Important for this study, the number of students receiving such meals did not vary meaningfully by ethnicity (see Table 2 for more detail), which indicates that any ethnic/non-ethnic differences in literacy achievement may not be due to major differences in income. The fact that the minority sample's SES is high enough to disqualify them from FARMS (and their high percentage of proficient reading achievement on the school district's standardized tests, as indicated in Table 2) suggests that the current study's minority sample may not be fully representative of lower-income minority students elsewhere.

Additionally, the school system would not permit our research team to ask direct questions about immigration status, due a legal mandate that prohibits school inquiries about students' citizenship (see *Plyer v. Doe*, 1982). We developed a proxy for immigration status using the information we could collect: whether students spoke a primary language other than English at home with at least one parent (See Appendix A for question items used to obtain this information). We examined both student and parent-report of primary and secondary languages spoken at home to establish these

criteria, and participants who met these criteria were coded as likely first- or second-generation immigrants (see Table 1 for the numbers of first- or second-generation immigrants among minority and White students). The high percentage of ethnic minority students who are immigrants (70%) implies that differences found between minority and White students may possibly be due, in part, to differences in immigration status, and this possibility will be explored in the analyses, below.

### **Data Collection and Measures**

Graduate lab members gathered the data in this study from January-March 2015. We administered Likert-style, socioemotional questionnaires to students by reading the question items aloud and asking them to rate how much the question items resembled them (e.g., 1 = *Not at all like me*, 5 = *Very much like me*). To assist students in rating themselves, we gave them a printed visual response rating scale. We administered interviews to students one at a time, and they were encouraged to ask clarifying questions if they were unsure about the meaning of the questionnaire items. After students completed the questionnaires, they completed a three-minute standardized literacy test.

#### **Socioemotional measures.**

***Engagement.*** We assessed students' engagement with the emotional engagement subscale of the Engagement vs. Disaffection with Learning scale (EvsD; Skinner, Furrer, Marchand, & Kindermann, 2008). Students rate how much five items about interest and enthusiasm in school resemble them using a five-point scale (1 = *Not at all*, 5 = *Very much*). The subscale has demonstrated adequate internal consistency among elementary students ( $\alpha = .76-.82$ ; Skinner, Kindermann, & Furrer,

2009), and our research among an ethnically diverse sample of elementary students suggests similar results ( $\alpha = .72 - .78$ ;  $M(SD) = 4.31(.67)$ ) (Weston, et al., in preparation).

***Growth mindset.*** We a subscale of the larger growth mindset measure titled the Resiliency: Helpless vs. Mastery-Oriented Responses to Failure scale (Blackwell, 2002; Blackwell et al., 2007). First, students listen to a vignette about failing a quiz in a favorite class. They are then asked to rate how much they agree with statements about reasons for their failure and strategies for the future (1 = *Disagree a lot*, 6 = *Agree a lot*) through eight question items. Some of these statements embodied a growth mindset, in which success was based on effort and failure presented a challenge to overcome (e.g., “I would feel motivated, like I wanted to work harder at it”). Other items conveyed its opposite, a fixed mindset, in which success represented one’s inherent abilities, and a preference to avoid risking failure in the future (e.g., “I would try not to take this subject ever again”). The subscale has adequate internal consistency among ethnically diverse students ( $\alpha = .76-.84$ ;  $M(SD) = 5.01(1.17)$ ) (Blackwell et al., 2007).

The questionnaire was originally designed for middle and high school students, and through a brief pilot of the questionnaire, we saw that question items needed to be added to better reflect elementary students’ experiences. We asked the corresponding author if there were question items tailored to a younger age group. Indeed there were, although there are no published psychometrics on these updated items. The new items include responses to failure such as, “I would feel sad or depressed,” or “I would ask someone for help with the subject.” In the results of the



current study, I will report statistics for both the original scale and the newer elementary items.

**Grit.** We assessed grit through the Short Grit Scale (Grit-S; Duckworth & Quinn, 2009), an eight-item questionnaire about how students maintain interest and energy in their schoolwork. Students rated how much the Grit-S items sounded like them (1 = *Not at all*, 5 = *Very much*). The original questionnaire was designed for older, highly literate students, and we adapted our questionnaire to increase comprehension among younger participants. As an example, the item “I have difficulty maintaining my focus on projects that take more than a few months to complete” was phrased, “It’s hard to focus on school work that takes along time to complete.”

Earlier research on the Grit-S revealed strong reliability ( $\alpha = .82-.84$ ) and a mean of 3.4 ( $SD=.8$ ) for elementary students in the National Spelling Bee. Our research with an ethnically diverse elementary school sample suggests that the adapted wording produces similar results ( $\alpha = .73$ ;  $M(SD) = 3.81(.68)$ ) (Weston, Boyars, O’Neal, & Wigfield, in preparation).

**Emotion regulation: “Pause anger.”** We measured students’ emotion regulation strategies through the Pause Anger subscale of the Emotions as a Child – Emotion Regulation Strategies, Anger scale (EAC-ER; Magai & O’Neal, 1997). The items in this Pause Anger subscale were created specifically for this study, because the school was interested in mindful emotion regulation. First, we asked students to rate how often they got angry or frustrated over the past month (1 = *Never*, 5 = *Very often*). Then, we prompted students to think about the times when they got angry or

frustrated as they answered the Emotions as a Child items. To assess students' mindful regulation strategies specifically, we appended a three-item subscale to the original Emotions as a Child questionnaire: the "Pause Anger" subscale. These items centered on the strategy of pausing before reacting in anger, asking students how likely they were to "take a few deep breaths before reacting," "calm myself down," and "wait before acting on my anger." The current study only uses the Pause Anger subscale in its comparison with grit, growth mindset, and engagement. The original Emotions as a Child questionnaire has revealed adequate internal consistency among ethnic minority adolescents (O'Neal, 2000), and in preliminary analyses, the Pause Anger subscale also produced adequate results in this sample ( $\alpha = .67$ ;  $M(SD) = 3.57(.84)$ ).

#### **Literacy achievement.**

*Standardized test scores in reading.* The schools provided students' scores on the district's standardized achievement test in reading, the Measures of Academic Progress in Reading (MAP-R; Northwest Evaluation Association, 2009). MAP-R is a nationally normed literacy test for children in second grade through high school that measures students' reading comprehension and vocabulary. The test requires students to answer multiple-choice questions in a variety of formats: fill in the blank, matching words to their definition, answering comprehension questions on brief essays, etc. Although the test is not timed, it usually takes students about an hour.

Students take the test on the computer and the test is computer-adaptive, meaning that each successive test item is selected from a pool of possible items to match the student's estimated ability level, as based on their prior performance. Item

pool structures are moderately to highly correlated ( $r = .68-.92$ ) and internal consistency is generally high ( $\alpha = .61-.92$ ). Students took the Spring version of the MAP-R at approximately the same time as when they completed our socioemotional questionnaire, and the scores on the Spring Map-R will be used as a literacy outcome measure.

***Reading decoding, fluency, and comprehension.*** We also assessed students' literacy with a concurrent measure of their reading and comprehension skills. Immediately following their interview with us, each participant took the Test of Silent Reading Efficiency and Comprehension (TOSREC; Wagner, Torgeson, Rashotte, & Pearson, 2010), a three-minute measure of silent reading fluency (speed), decoding (accuracy), and comprehension. Students had to read as many sentences as they could within the time limit, marking each sentence as true or false (e.g., "An apple is blue"). The TOSREC has strong reliability and convergent validity with other measures of literacy achievement (WJIII; Wagner et al., 2010).

## **Analysis**

**Question one: "*Which socioemotional skills best predict success in elementary school?*"** To answer this question, I will first analyze the data via simple and multiple linear regressions. As explained in the first two chapters, one purpose of this study is to compare, separately, the skills' predictive relationship with literacy achievement *without* controlling for one another, and this aim will shape the analyses.

An approach to the first question of "*Which socioemotional skills best predict success in elementary school?*" is to test the significance of separate, simple linear

regressions between each of the four socioemotional skills and the concurrent literacy achievement variables (see Figure 2).

I will also do an analysis in which the socioemotional variables *do* control for one another in predicting literacy achievement. This aim can be accomplished through a multiple linear regression between the student-reported socioemotional skills and literacy achievement (see Figure 3). A comparison of the skills' beta weights and confidence intervals will inform an understanding of the skills' predictive associations with literacy. For these analyses, I will use Mplus instead of SPSS; Mplus allows inclusion of both outcomes in model testing, with the goal of parsimony and the outcomes adjusting for each other. I will set all predictors in my SEM multiple regressions to be correlated with each other, and the program sets outcomes, or endogenous variables, to be automatically correlated with each other as well.

**Question two: “*Does the predictive strength of these skills differ by ethnicity?*”** I will then employ the same regression procedures to investigate the second question, “*Does the predictive strength of these skills differ by ethnicity?*” For each analysis, the sample will be split by “minority” (Asian-American/Pacific Islander, Black, Latino/a, or Multiethnic) and “White” (European American) status. Given the small sample size of ethnic minority subgroups, I will examine ethnic minority students, as a whole, across Asian, Black, Hispanic, and Multiracial students (see Table 1 for the number of students in each demographic group). It was important to combine subgroups for sufficient power to test this study's hypotheses; while an approach that includes all minority students in one variable is not ideal, it may serve

as a preliminary test of socioemotional approaches to the achievement gap. I will also look at the magnitude of relations for each ethnic minority subgroup in a post-hoc analysis, and I will explore the role of immigrant status in the results by re-running the analyses with the immigrant students only. Using parent-provided information on ethnicity, those coded as Asian, Black, Hispanic, Native American, and Multiracial will be recoded as “minority” (n=86). I will do moderation analyses using the ethnic/White variable as a moderator for each of the skills. The moderation analysis will inform whether the two groups significantly differ in how socioemotional skills are related to literacy achievement.

**Determination if prediction by skills of achievement differs in magnitude.**

The primary hypothesis in this thesis is that the strength of relations between some socioemotional skills and achievement varies, and especially, they vary across ethnic versus non-ethnic minority groups. Therefore, I predict that a SEM model in which socioemotional skills are allowed to vary in their relation to literacy achievement will fit best, compared to a nested model in which all socioemotional skills are constrained to have the same relation to literacy achievement, across both ethnic and non-ethnic-minority groups (see Figure 4). I will then compare the two models and determine which model is a better fit for minority students and White students, using the criteria of a significant chi-square difference score.

## Chapter 4: Results

The data was analyzed using the Statistical Package for the Social Sciences (SPSS) (SPSS Inc., 2016) and MplusVersion 7.4 software (Muthen & Muthen, 2015).

The results below are organized according to this thesis's two main questions:

“Which socioemotional skills best predict success in elementary school?” and “Does the predictive strength of these skills differ based on ethnicity?”

### Means and Correlations

As detailed in Table 3, a statistically significant literacy achievement gap existed between minority and White students (with TOSREC,  $t(148.42) = -3.92, p < .001$ ; with MAP-R,  $t(164.89) = -2.58, p < .05$ ), with lower literacy among ethnic minority students. Conversely, there was no difference between minority and White students' socioemotional scores. For both groups, mean socioemotional scores resembled those found elsewhere in the literature (Blackwell et al., 2007; Duckworth et al., 2011) and held low-to-moderate correlations with each other (as in Von Culin et al., 2014; West et al., 2016; see Table 4).

### Question One: “*Which Socioemotional Skills Best Predict Success in Elementary School?*”

**Simple and multiple regressions.** Analyses suggested that the sample met regression assumptions of homoscedasticity, linearity, normality, and multicollinearity (tolerance = 0.75-.85). Using the TOSREC as an outcome, simple regressions suggested that, when analyzed as separate predictors, grit, engagement, and growth mindset were significant predictors of students' TOSREC scores. When

MAP-R was used as an outcome, grit was a significant predictor of students' scores, and engagement approached significance as a predictor (see Table 5).

Using Mplus, engagement, growth mindset, grit, and emotion regulation were entered simultaneously, and both literacy outcomes were correlated together in a single multiple regression model. The model fit was strong (RMSEA = 0, CFI = 1.0, SRMR = 0). In these multiple regressions, only grit significantly predicted the full sample's TOSREC and MAP-R scores (Table 6, Figure 7). Overall, these results confirmed the current study's first hypothesis: certain socioemotional skills were significant in predicting literacy achievement, while others were not significant predictors.

**Question Two: “*Does the Predictive Strength of These Skills Differ by Ethnicity?*”**

**Simple and multiple regressions.** For simple regressions, grit emerged as the only significant predictor for minority students, for both TOSREC and MAP-R. Grit was only significant for White students' MAP-R scores. Engagement, on the other hand, was predictive of White students' achievement on both outcome measures.

Using Mplus, multiple regressions suggested that grit was a significant predictor, but only for minority students (see Table 6). Conversely, engagement was borderline significant for White students' TOSREC scores ( $p = 0.05$ ). Results suggest that grit was the best predictor of literacy for minority students, and that engagement may predict literacy for White students. The results support this study's initial hypothesis that different skills would be stronger predictors of literacy achievement for ethnic minority versus White groups.

**Moderation.** Minority status was examined as a moderator in the relation between socioemotional skills and literacy achievement (Figures 5 and 6). The interaction term for minority status with grit was a significant predictor of literacy scores, even in the full model with other socioemotional predictors (For TOSREC,  $\Delta R^2 = 0.02$ ,  $\Delta F(1,232) = 4.24$ ,  $p < 0.05$ ,  $\beta = -13.98$ ,  $t(232) = -0.23$ ,  $p < 0.05$ ; for MAP-R,  $\Delta R^2 = 0.04$ ,  $\Delta F(1,222) = 9.11$ ,  $p < 0.01$ ,  $\beta = -15.90$ ,  $t(222) = -3.12$ ,  $p < 0.01$ ). Results suggest that minority status significantly moderated the relation between grit and literacy. As shown in Figures 5 and 6, low grit ethnic minority and White students differed in literacy achievement; among high grit students, however, the achievement gap disappeared.

### **Sub-Group Exploration**

Plausibly, a particular ethnic subgroup drove the results above. To determine if this was the case, the ethnic differences were explored further by correlating socioemotional skills with literacy for each ethnic subgroup. The results are depicted in Table 7, although they must be interpreted with caution due to the small sample sizes in some groups. Results seemed to be driven by all ethnic groups but Latino/a.

As 70% of the minority sample may be first- or second-generation immigrants (see Table 1), it was also important to investigate whether immigrant minorities drove the significant results above. The subsample of nonimmigrant minorities was too small to conduct a statistical test comparing nonimmigrant to immigrant minority students ( $n = 20$ ); in multiple regressions with each group, however, immigrant and non-immigrant minority students' beta magnitudes for grit with literacy appeared



similar to one another. It seems unlikely that immigrant minority group drove the study's results.

### **Do Socioemotional Skills Differ in the Strength by which they Predict Literacy Achievement?**

An initial hypothesis in this thesis was that the socioemotional skills varied in their relations with literacy. I expected that a model allowing skills to vary in their relations with literacy would fit better than a model that constrained the skills' relation to literacy to be the same, or not vary (see Figure 4 for an illustration of these two models). Specifically, I hypothesized that a "full model," in which the four socioemotional skills were free to vary in their relation with literacy, would fit our sample better than a "nested model" in which the skills were not allowed to vary in their relation with literacy. More specifically, the skills' relations with literacy were set in the nested model so that all of the skills' estimates equaled the mean of all the socioemotional skills' beta estimates on literacy. SEM allowed me to compare these two models to see which fit better, as indicated by a statistical difference between the two models.

Despite the regression results above which seem to indicate that the skills do vary in their relation to literacy, the SEM results did not support my hypothesis that the skills would vary in their relation to literacy. The difference in model fit only approached significance for the full sample ( $X^2 = 13.74, p = 0.056$ ), and there was no difference in model fit within each of the ethnic groups. The difference of magnitude between grit and other predictors in their relations with literacy was not strong enough, according to the standard of a difference in fit between the two models. In

sum, although regression analyses seemed to suggest that grit was a stronger predictor of literacy than other skills, I did not find confirmation of the hypothesis that skills vary in their prediction of literacy.

## **Chapter 5: Discussion**

This study examined which socioemotional skills were most predictive of elementary school achievement across diverse students. In answering this question, two important points emerged. First, grit was most predictive of literacy achievement for minority, but not White, students. In fact, literacy achievement was equally high for high grit White and ethnic minority students in this sample. Such findings are consistent with this study's culture-specific approach. Second, SEM analyses tempered the study's findings by suggesting that, despite grit's seeming importance as a predictor in regression analyses, the predictive magnitude of the socioemotional skills with literacy were ultimately more similar than different. Below, I discuss grit, its relations with literacy among diverse students, and implications for future achievement gap research.

### **Socioemotional Skills and Achievement**

**Comparison of socioemotional skills.** Researchers who study socioemotional skills often take a niche approach to their research question, focusing on one skill above others (Zins et al., 2007). In contrast, the current study added to the literature by comparing several disparate skills in one model to see which were significant predictors of achievement. The current study's approach is important because, despite the field's agreement that socioemotional skills are important (e.g., Durlak et al., 2011), there is little unanimity on which skills to cultivate. The "fragmented" approach to studying these skills (Zins et al., 2007, p. 193) has contributed to media-driven, rather than research-driven, choice of socioemotional skill education in schools (Cohen, 2015; Elias, 2009; Greenberg et al., 2003). The current study's

design contributed a theory-driven model-testing improvement in the study of socioemotional skills, particularly as they related to elementary school literacy achievement and the literacy achievement gap.

It was telling to compare which socioemotional skills were most predictive. Based on multiple regression analyses for students overall, grit was the most important and only significant predictor of literacy. These results dovetail with the few studies of grit among elementary school students, which suggested that grit held small-to-moderate correlations with elementary school achievement (Duckworth et al., 2011; Rojas, Reser, Usher, & Toland, 2012; Rojas & Usher, 2012). Even while engagement – a long-researched and valued skill (S. L. Christenson, Reschly, & Wylie, 2012) – approached significance across the entire sample, its relation with literacy was weaker than grit's.

These results indicated that grit was the only significant predictor of achievement, when adjusting for other competing socioemotional predictors of achievement. As a construct, grit represents the principle that no matter one's aptitude, success is achieved through a combination of effort and dedication to the task, and long-term goals (Duckworth, 2016). While grit may not predict all forms of success (Credé, Tynan, & Harms, 2016), the current study's regression results suggest that it is uniquely important for elementary school literacy.

**Socioemotional skills among ethnic groups.** As expected, the socioemotional skills' relations with achievement differed by ethnic minority status. I found that grit was only related to literacy for minority students, not White students. Moreover, results generally suggested that socioemotional skills were less

consequential for White students' literacy achievement, with the possible exception of engagement. Even though minority and White students shared nearly identical, high levels of self-reported socioemotional skills, grit played a unique role for minority students.

Moderation by ethnicity confirmed that the relations between grit and literacy differed for ethnic minority and White groups, even though both groups shared nearly identical levels of socioemotional skills. Figures 5 and 6 illustrate how these results differed by ethnicity: grit's relation with literacy was stronger for minority students, and those ethnic minority students with higher grit had higher literacy scores. This illustration was so striking that the notable literacy achievement gap between "low grit" White and ethnic minority students disappeared completely between White and ethnic minority "high grit" students.

The moderation finding complements past research among Black college students, which promoted grit as "an effective leveler" of the ethnic achievement gap (Strayhorn, 2014, p. 7). Additionally, past literature reviews have speculated upon grit's importance for closing the achievement gap among younger students (Farrington et al., 2012; Snipes et al., 2012). Comparisons of grit's influence for different ethnic groups, however, had not been done prior to the current study. The current study may help lay the groundwork for future intervention research by demonstrating how the socioemotional skills function differently for different ethnic groups.

Most research, only reports on the full sample of participants (Arnett, 2008; Henrich et al., 2010; Rozin, 2001; Sue, 1999); conversely, the current study examined

how processes differ for participants of different ethnicities. This approach, informed by the ecological model and a culture-specific approach (Becker & Luthar, 2002; Bronfenbrenner & Morris, 2006; Steinberg et al., 1995), supported more meaningful conclusions about how to close the achievement gap within participating schools. It suggests that researchers cannot assume that one-size-fits-all with socioemotional skills. Only certain socioemotional factors, not all, may be relevant for ethnic minority student achievement. This study highlighted the importance of examining what works by ethnic group before designing socioemotional interventions.

In sum, while grit predicts achievement for all students, it matters far more for minority students. Why might this be the case? The first possible answer is that minority students are more likely to encounter structural barriers (e.g., poverty, fewer educational supports, or fewer English language skills; Helms, 1984; National Center for Education Statistics, 2010; Pew Center, 2015a) which may require grit to overcome. White students (in the current sample, at least) may encounter fewer such obstacles; grit may, therefore, be less important for their literacy achievement, while other motivational factors like engagement may help differentiate them from other students. A second possible answer considers cultural differences. Past research on school achievement values (McCombs & Pope, 1994; Pew Center, 2015b) suggests that people from minority and immigrant cultures were likely to emphasize the importance of persistence through challenge, and the accomplishment of “the American Dream” as primary motivators for school achievement. Conversely, White participants were more likely to value the importance of engagement and a feeling of

inspiration from one's studies, a finding that mirrors the current study's results. Through this lens, ethnic differences found in the current study may result from different cultural values of what socioemotional skills are important for achievement. A third answer combines both of the possibilities above. In response to structural barriers, different cultures may adapt by valuing different socioemotional skills as important for achievement, such as grit or engagement.

**Engagement, emotion regulation, and growth mindset.** With simple regressions, engagement was only related to achievement for White students. With multiple regressions, engagement was borderline significant for White students, even after controlling for overlap between the predictors. Conversely, engagement never predicted minority students' achievement. These findings echo previous literature on engagement's limited effects for minority students (Sciarra & Seirup, 2008; Voelkl, 1997), despite its relevance for White students.

The findings also raise several questions about school staffs' perceptions of engagement, as raised elsewhere in the literature (e.g., Becker & Luthar, 2002; Christenson et al., 2012; Farrington et al., 2012). Perhaps teachers and school psychologists hold different expectations around engagement and achievement for their White students versus their ethnic minority students. Alternatively, they may recognize White students' expressions of engagement more easily than those of ethnic minority students (Dudley-Marling & Lucas, 2009). Likewise, ethnic minority students may feel more hesitant and uncomfortable expressing their engagement in class, whether because of cultural differences or feelings of exclusion (Ladson-Billings, 1995).

Growth mindset and emotion regulation, on the other hand, did not relate to literacy achievement for either group. These two skills may not have exhibited stronger relations with literacy for the following reasons. Growth mindset research focuses on students in middle school through college, and on achievement in science and mathematics. It is possible that growth mindset only becomes a salient area of development for students when they enter the more competitive (and less supportive) environments of secondary and higher education, and when they are working on subjects that pull for a fixed mindset, like math (Rattan et al., 2012).

Mindful emotion regulation is known to support positive social and emotional outcomes among students (Black, 2015; Felver et al., 2015), but outcomes such as standardized achievement are rarely studied (DeRuy, 2016). Moreover, strategies to regulate angry emotions are more related to behavioral changes than test scores (Brock et al., 2009; Willoughby et al., 2011). Yet, while growth mindset and emotion regulation showed little relation to students' literacy achievement in the current study, they may still be important for other areas of the students' functioning.

**Are skills really different in their relations with achievement?** The bigger question this study asked was: Do socioemotional skills differ in their relations with achievement, or are they similar in their magnitude of association? This question is essential to the study of socioemotional skills, but no study design had actually tested it. Ultimately, socioemotional skills' magnitudes in explaining achievement were relatively similar (see Table 6), as indicated by comparison of a model allowing socioemotional predictors to vary in strength versus a model in which they were not allowed to vary in magnitude of prediction.



This unexpected finding offered a fresh perspective on socioemotional skills in two ways: socioemotional skills may be more similar than not in their associations with achievement, even after adjusting for other socioemotional skills. Second, these results encourage researchers to consider a higher standard than simply testing to see if a skill is a significant predictor of achievement. The higher standard may lead to profoundly different conclusions. Rather than racing to cultivate individual, “in vogue” skills in students (Cohen, 2015), researchers and educators may choose to take a more holistic (CASEL, 2013) approach to “character education” (Elias, 2009).

### **Study Limitations**

There are numerous limitations of the current study. As discussed elsewhere, this study’s analyses often combined several minority subgroups to achieve minority sample size large enough to produce meaningful results. Yet, one should not assume monolithic processes across ethnic groups, and ideally, all the analyses would have been performed for each subgroup, without combining them. To accommodate this known limitation, post-hoc correlations between skills and achievement were performed for the different ethnic subgroups. These analyses helped enrich the data’s interpretation, and they generally supported the study’s main findings – that socioemotional skills were related to achievement for most subgroups, and that compared to those in the minority subgroup, these relations were less powerful for White students. The current study has taken the initial step of considering minority versus non-minority differences in analyses; future research should oversample students from each ethnic group, enabling the examination of the skills’ relevance for

specific ethnic groups of students. Moreover, if the current study was replicated and supported on a larger scale, then the subgroup comparisons could be more easily generalized to the macrolevel achievement gap, as opposed to the school-level achievement gap examined here.

A second limitation is the generalizability of the study's minority sample to minority students in the wider American school system. As shown in Table 2, schools reported relatively low enrollment rates in English as a Second Language (ESOL) or Free and Reduced Meals (FARMS) programs. These low enrollment rates contrast with national data, which suggest that a greater proportion of public school students fall below the poverty line or would benefit from ESOL programs (National Center for Education Statistics, 2016; Snyder & Musu-Gillette, 2015). Anecdotal data from the study's schools, however, suggests that even if few of the minority students in the study were in poverty or ESOL classes, they may have been less affluent than their White peers. Regardless, a sample of non-poverty ethnic minority students holds much value in achievement research given that the majority of ethnic minority studies are limited to ethnic minority students living in poverty (Ramirez & Carpenter, 2005).

Thus, like much other research suggesting multiple contributors to the national achievement gap (e.g., Hemphill & Vanneman, 2011; Vanneman et al., 2009; Viadero & Johnston, 2000), the current study revealed that school-level achievement gaps existed even for an ethnic minority sample that varied in income and background. These students' economic and ethnic identities may have been especially salient to them, as most lived in or near affluent, largely White neighborhoods. It is plausible that such experiences reduced their feelings of belongingness (Cook et al.,

2012) and led them to feel less comfortable speaking up and engaging in class (Cook et al., 2012; Downer et al., 2007; Steele et al., 2002).

A third limitation, and prompt for future research, is this study's non-experimental nature. The study's correlational, cross-sectional design limits claims about the causal relationships between socioemotional skills and achievement, for the wider population and minority students in particular. Conversely, intervention studies are a type of experimental study which has the potential to test whether increased socioemotional skills cause better school achievement – and if some socioemotional skills cause greater achievement gains for minority students, as compared to White students (e.g., Aronson, et al., 2002; Cohen et al., 2009; Good et al., 2003).

Researchers should further explore how and why some skills are more influential for minority students, and they should include multiple skills and ethnic groups in the same study.

### **Implications for Practice**

The results of this study may raise valid questions for school psychologists on whether their interventions are relevant for *all* ethnic minority and White students. School psychologists may want to do more literature reviews on whether their target socioemotional variables are related to achievement among their samples of interest. Likewise, school psychology training programs need to continue diversity training around the concept that “one size” of socioemotional skills does not fit all, and they may not have the same consequences for achievement.

This tailored approach is consistent with culturally responsive practice. When addressing the achievement gap, a culturally responsive approach may encourage

school psychologists to understand the lives of their ethnic minority students. Understanding their students on a personal level may be more productive than questioning why they are functioning differently from the typical White student (Becker & Luthar, 2002).

Likewise, school psychologists must remember to put socioemotional research in context. Socioemotional skills may help students “seize opportunities to learn” (Yeager et al., 2013, p. 65); to do so, however, students need ample opportunities in the first place. School psychologists must continue to push for the larger, systemic supports (e.g., Free and Reduced Lunch) that provide students with learning opportunities (Leos-Urbel et al., 2013), even while they work on individual-level socioemotional skills. School psychology training programs can encourage this approach in students by exposing them to multiple approaches to close the achievement gap: not only individual-level approaches, such as socioemotional skills, but systemic approaches, too.

## **Conclusion**

This study contributed to the literature on socioemotional skills and the achievement gap in three ways. First, it suggested that, rather than taking a niche approach to socioemotional skills, researchers need to compare several skills to one another to see which skill has the strongest relation with achievement; in the current study, grit was most related to achievement. Second, this study recommends a culture-specific approach in research on socioemotional skills. If a one-size-fits-all approach had been used, important results would have been lost. In this study, only once the sample was examined by minority status did it become clear that grit was

significantly related to achievement for minority students, but not for White students. Finally, this study provided an important caveat to conclusions about the socioemotional skills' relations with achievement. While the common analytical approach (i.e., regression) distinguished grit above all other skills, a model comparison approach via SEM suggested that the magnitude of relations between the socioemotional skills and achievement were more similar than different, for both minority and White students.

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Table 1

*Sample Demographics*

Demographic Variables	<i>N</i>	%
Child Sex		
Female	151	56
Age		
8 years	23	9
9 years	83	31
10 years	93	35
11 years	54	20
Grade Level		
3 <sup>rd</sup>	74	28
4 <sup>th</sup>	78	29
5 <sup>th</sup>	93	35
Ethnicity		
Asian/Pacific Islander	13	5
African American	27	10
Latina/o	16	6
European American	165	61
Multiethnic	31	12
Other	15	6
Immigration-Status <sup>a, b</sup>		
Minority	61	70
Asian/Pacific Islander	10	77
African American	20	74
Latino/a	13	81
Multiethnic	16	52
European American	27	16

<sup>a</sup> Students were coded as probable first- or second-generation immigrants if they spoke a non-English language at home with one of their parents.

<sup>b</sup> Percentages reflect the amount of each subpopulation that is immigrant.

Table 2

*School-provided sample demographics*

Ethnicity	%	ESOL <sup>a</sup>	FARMS <sup>b</sup>	SPED <sup>c</sup>	Reading Proficiency <sup>d</sup>		
					Grade 3	Grade 4	Grade 5
School 1							
American Indian	<5	<5	<5	<5	—	—	—
Asian American	5.4	<5	<5	<5	—	—	—
African American	14.7	<5	<5	<5	—	>95	>95
Latino/a	15.8	<5	7.6	<5	58.8	83.3	92.3
Pacific Islander	<5	<5	<5	<5	—	—	—
European American	57.6	<5	<5	<5	85.4	>95	>95
Multiple Ethnicities	6.2	<5	<5	<5	—	—	—
School 1 Total		5.4	14.1	10.5	—	—	—
School 2							
American Indian	<5	<5	<5	<5	—	—	—
Asian American	<5	<5	<5	<5	—	—	—
African American	12	<5	8.9	<5	62.5	>95	—
Latino/a	8.9	<5	<5	<5	81.8	87.5	80
Pacific Islander	<5	<5	<5	<5	—	—	—
European American	67	<5	<5	<5	>95	>95	>95
Multiple Ethnicities	7.2	<5	<5	<5	>95	—	—
School 2 Total		5.9	14	7.4	—	—	—

*Note.* Schools provided their demographic information separately, and they were only required to report information that included more than 5% of any demographic group. Additionally, they did not need to report on statistics that applied to fewer than ten students, as denoted with a “dash” in the table. Because the schools provided percentages, totals between both schools cannot be combined. School 1 had 354 students in total, and School 2 had 542 students.

<sup>a</sup>ESOL refers to the English as a Second Language Program.

<sup>b</sup>FARMS refers to the Free and Reduced Lunch Program, an index of poverty.

<sup>c</sup>SPED refers to the Special Education Program.

<sup>d</sup>Reading Proficiency indicates the percentage of students who scored at or above proficiency level on the MAP-R.

Table 3

Literacy Achievement for the Full Sample, Minority, and White Students

	Total Sample			Minority			White		
	<i>M(SD)</i>	Min/Max	<i>n</i>	<i>M(SD)</i>	Min/Max	<i>n</i>	<i>M(SD)</i>	Min/Max	<i>n</i>
TOSREC	70.94(26.68)	.50/99.50	245	65.11(29.67)	.50/99.50	93	74.51(25.00)	8.00/99.50	152
MAP-R	81.88(20.95)	1.00/99.00	250	74.18(26.81)	1.00/99.00	94	86.51(14.71)	30.00/99.00	156
Engagement	4.09(0.65)	1.60/5.00	248	4.17(0.57)	2.40/5.00	95	4.04(0.69)	1.60/5.00	153
Growth Mindset	4.64(.51)	2.56/5.81	250	4.61(0.49)	2.88/5.81	96	4.65(0.52)	2.56/5.69	154
Grit	3.87(0.53)	2.00/4.88	249	3.82(0.47)	2.50/4.75	96	3.89(0.55)	2.00/4.88	153
Emotion Regulation	3.57(0.84)	1.00/5.00	249	3.68(0.79)	2.00/5.00	96	3.51(0.86)	1.00/5.00	153



**Table 4a***Intercorrelations Between Socioemotional and Literacy Variables for the Full Sample*

Measure	1	2	3	4	5	6
1. Engagement	--	.33***	.43***	.31***	.15*	.11
2. Growth Mindset		--	.28***	.36***	.15*	.08
3. Grit			--	.25***	.21**	.26***
4. Emotion Regulation				--	.07	.03
5. TOSREC					--	.70***
6. MAP-R						--

**Table 4b***Intercorrelations Between Socioemotional and Literacy Variables for Minority and White Groups*

	Minority						White					
	1	2	3	4	5	6	1	2	3	4	5	6
1. Engagement	--	.20 <sup>t</sup>	.36**	.20 <sup>t</sup>	.07	.14	--	.46***	.48***	.39***	.23**	.18*
2. Growth Mindset		--	.21 <sup>t</sup>	.39***	.16	.09		--	.33***	.39***	.13	.04
3. Grit			--	.16	.33**	.38***			--	.32***	.12	.16 <sup>t</sup>
4. Emotion Regulation				--	.12	.01				--	.08	.12
5. TOSREC					--	.73***					--	.65***
6. MAP-R						--						--

<sup>t</sup>  $p < 0.10$ \*  $p \leq 0.05$ \*\*  $p \leq 0.01$ \*\*\*  $p \leq 0.001$

**Table 5a***Simple Regressions Between Socioemotional Skills and TOSREC Score*

Measure	Full Sample				Minority				White			
	R <sup>2</sup>	B	t	95% CI for B	R <sup>2</sup>	B	t	95% CI	R <sup>2</sup>	B	t	95% CI
Engagement	.02	5.59	2.08 <sup>*</sup>	-0.30,10.88	.01	3.69	.78	-7.06,14.43	.04	7.59	2.62 <sup>**</sup>	1.86,13.31
Growth Mindset	.02	6.85	2.00 <sup>*</sup>	0.12,13.58	.02	8.33	1.33	-4.13,20.79	.01	5.16	1.32	-2.56,12.88
Grit	.05	10.82	3.38 <sup>***</sup>	4.52,17.12	.10	19.62	3.16 <sup>**</sup>	7.28,31.96	.02	6.01	1.71 <sup>t</sup>	-0.93,12.94
Emotion Regulation	.00	1.99	.97	-2.05,6.04	.01	3.64	.92	-4.18,11.47	.01	2.29	.91	-2.43,6.60

**Table 5b***Simple Regressions Between Socioemotional Skills and MAP-R Score*

Measure	Full Sample				Minority				White			
	R <sup>2</sup>	B	t	95% CI for B	R <sup>2</sup>	B	t	95% CI	R <sup>2</sup>	B	t	95% CI
Engagement	.01	3.66	1.72 <sup>t</sup>	-0.54,7.86	.01	4.87	.97	-5.12,14.85	.04	4.23	2.33 <sup>*</sup>	0.64,7.82
Growth Mindset	.01	3.28	1.19	-2.15,8.71	.01	4.10	.69	-7.77,15.96	.00	1.51	.62	-3.33,6.35
Grit	.07	10.39	4.11 <sup>***</sup>	5.41,15.36	.11	22.23	3.57 <sup>***</sup>	8.97,31.48	.03	4.69	2.14 <sup>*</sup>	0.36,9.02
Emotion Regulation	.04	1.00	.60	-2.28,4.27	.00	0.62	.16	-6.81,8.05	.02	2.37	1.64	-0.48,5.23

<sup>t</sup>  $p < 0.10$ <sup>\*</sup>  $p < 0.05$ <sup>\*\*</sup>  $p < 0.01$ <sup>\*\*\*</sup>  $p < 0.001$

**Table 6***Regressions of Socioemotional Skills with Literacy Achievement*

	Full Sample		Minority		White	
	TOSREC	MAP-R	TOSREC	MAP-R	TOSREC	MAP-R
Intercepts	0.60(0.65)	2.02(0.70)	-0.61(1.11)	-0.09(1.09)	1.63(0.77)	4.79(1.04)
Engagement	0.02(0.08)	-0.01(0.08)	-0.08(0.11)	-0.01(0.11)	0.18(0.09) <sup>t</sup>	0.10(0.09)
Grit	0.19(0.07)**	0.28(0.08)***	0.31(0.11)**	0.35(0.12)**	0.07(0.09)	0.18(0.10)
Growth Mindset	0.06(0.07)	0.00(0.07)	0.04(0.09)	0.01(0.10)	0.01(0.09)	-0.12(0.08)
Emotion Regulation	-0.02(0.07)	-0.05(0.07)	0.09(0.10)	-0.03(0.10)	-0.01(0.09)	.07(0.08)

*Note:* Using Mplus, socioemotional skills were regressed on the Test of Silent Reading Efficiency and Comprehension (TOSREC) and the Measures of Academic Progress - Reading (MAP-R), two indicators of literacy achievement in model testing. In model testing, endogenous factors like TOSREC and MAP-R were automatically correlated with each other, and the socioemotional predictors were correlated with each other as well.

<sup>t</sup>  $p = 0.05$

\*  $p < 0.05$

\*\*  $p < 0.01$

\*\*\*  $p < 0.001$

**Table 7***Correlations Between Literacy Achievement and Socioemotional Skills within Ethnic Subgroups*

Ethnicity	<i>n</i>	TOSREC				MAP-R			
		Engagement	Growth Mindset	Grit	Emotion Regulation	Engagement	Growth Mindset	Grit	Emotion Regulation
Asian / Pacific Islander	12	.37	.31	.52 <sup>t</sup>	-.16	.68 <sup>*</sup>	.45	.45	-.02
Black	20	-.46 <sup>*</sup>	-.04	.33	-.06	-.35	-.03	.42 <sup>t</sup>	-.02
Latino/a	13	-.09	.02	.12	.03	.24	-.07	.04	-.41
Multiethnic	26	.60 <sup>***</sup>	.40 <sup>*</sup>	.49 <sup>*</sup>	.34 <sup>t</sup>	.56 <sup>**</sup>	.14	.65 <sup>***</sup>	.16
White	141	.23 <sup>**</sup>	.13	.12 <sup>*</sup>	.08	.18 <sup>*</sup>	.04	.16 <sup>t</sup>	.12

<sup>t</sup>  $p < 0.10$ <sup>\*</sup>  $p \leq 0.05$ <sup>\*\*</sup>  $p \leq 0.01$ <sup>\*\*\*</sup>  $p \leq 0.001$

**Table 8***Multiple Regressions Among Immigrant Students*

	Immigrant				Non-Immigrant			
	Minority		White		Minority		White	
	TOSREC	MAP-R	TOSREC	MAP-R	TOSREC	MAP-R	TOSREC	MAP-R
Full Model	.13 <sup>t</sup>	.16 <sup>t</sup>	.32	.19	.20	.14	.03	.05
Constant	-13.63(42.99)	4.48(43.56)	-29.28(66.11)	95.11(50.20)	-67.23(64.22)	2.16(48.13)	43.77(20.54)	65.55(12.38)
Engagement	-10.64(6.56)	-1.94(6.48)	21.95(11.57) <sup>t</sup>	6.08(8.74)	17.36(12.613)	-4.02(10.24)	3.93(3.55)	2.01(2.16)
Growth Mindset	10.79(8.80)	1.53(9.13)	-9.19(13.54)	-15.84(10.50)	-0.41(10.315) <sup>*</sup>	3.74(8.20)	3.68(4.55)	-.11(2.74)
Grit	18.77(8.04) <sup>*</sup>	23.73(7.88) <sup>**</sup>	22.83(14.68)	13.85(11.52)	16.97(13.688)	14.81(10.96)	0.68(4.05)	2.25(2.48)
Emotion Regulation	0.08(5.05)	-5.57(5.23)	-11.06(7.42)	-6.40(5.84)	-0.95(7.503)	5.42(5.90)	-0.75(2.67)	1.54(1.62)

*Note:* Multiple regressions were performed with a split file between immigrant and non-immigrant students. Results are unstandardized.

<sup>t</sup>  $p < 0.10$

<sup>\*</sup>  $p < 0.05$

<sup>\*\*</sup>  $p < 0.01$

<sup>\*\*\*</sup>  $p < 0.001$

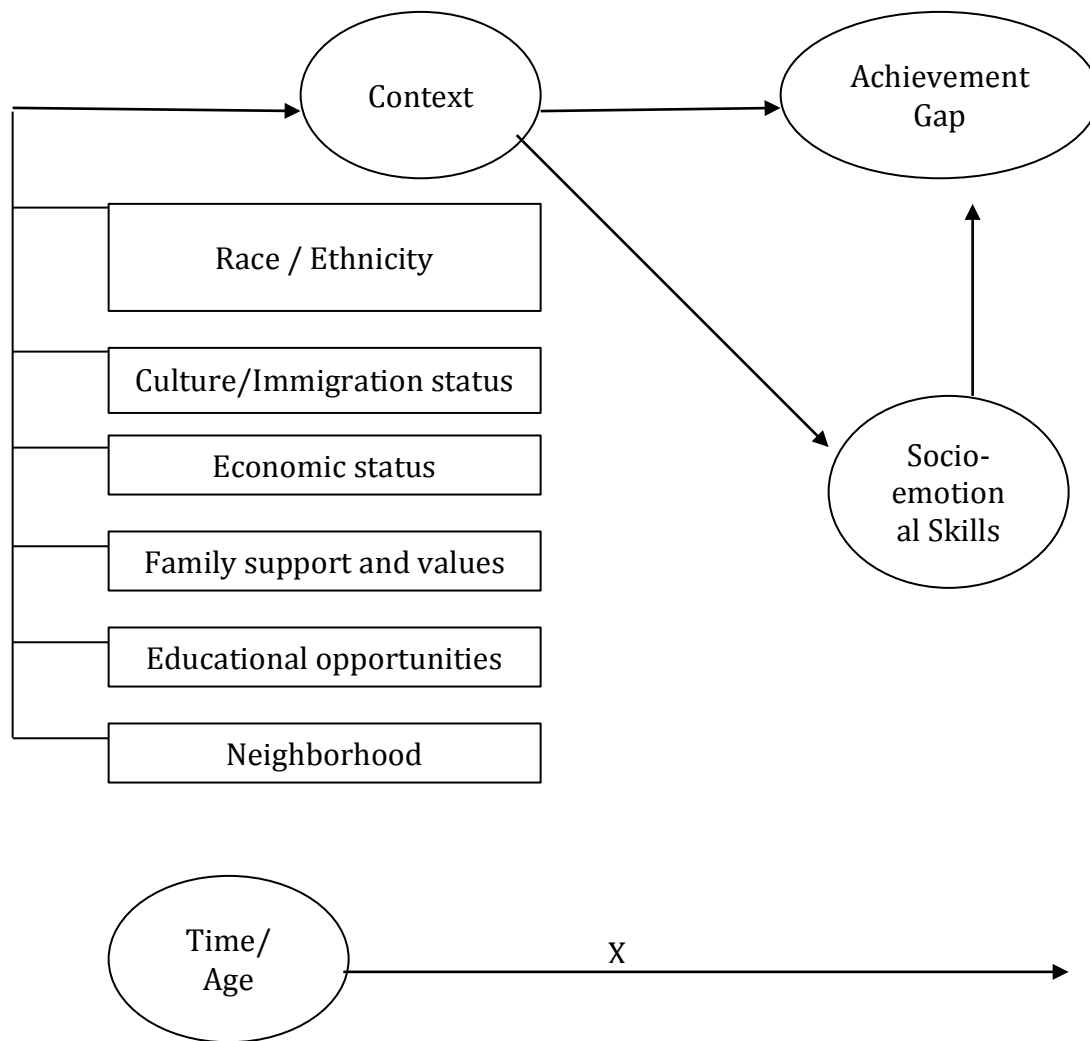


Figure 1. Contributors to the achievement gap.

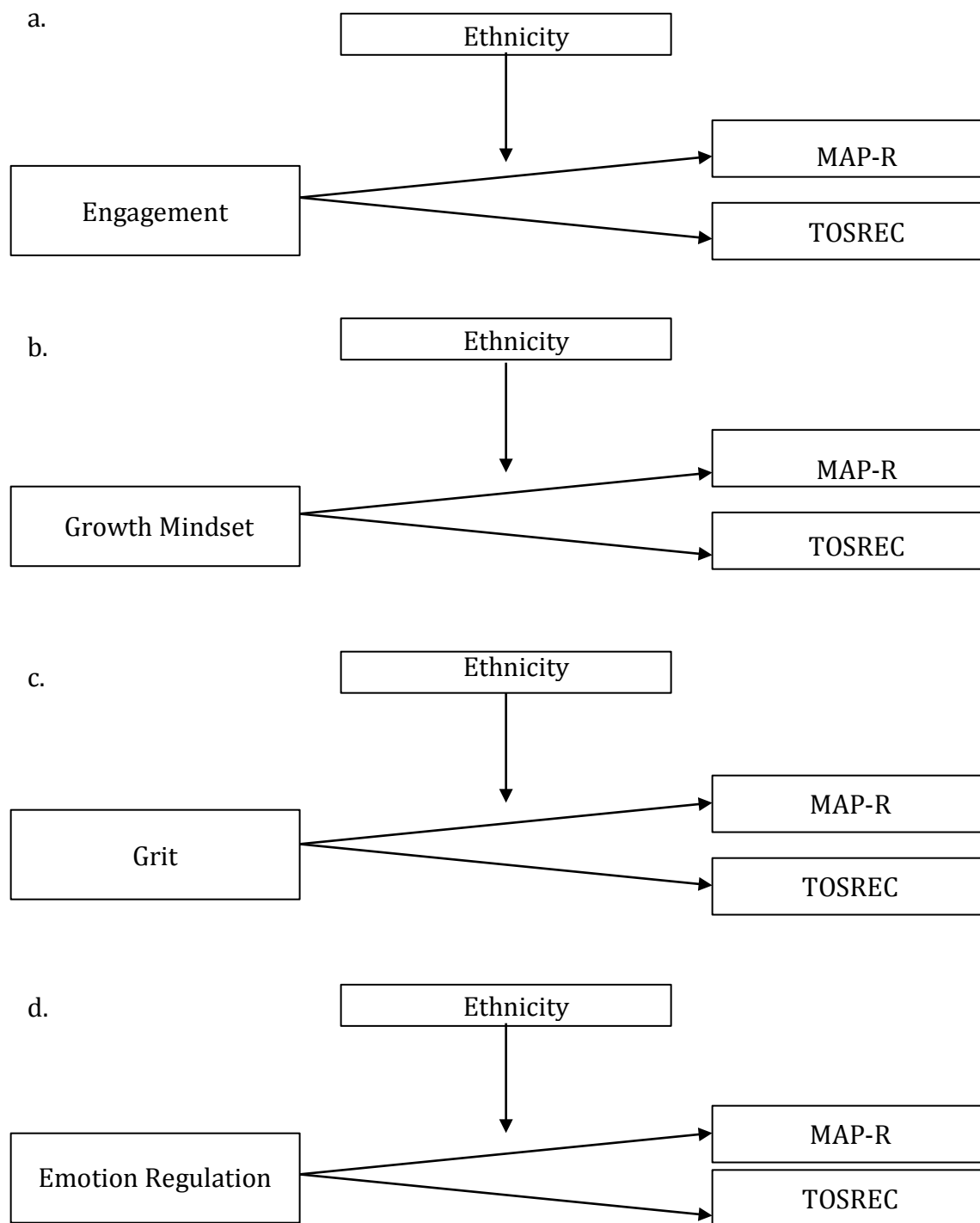
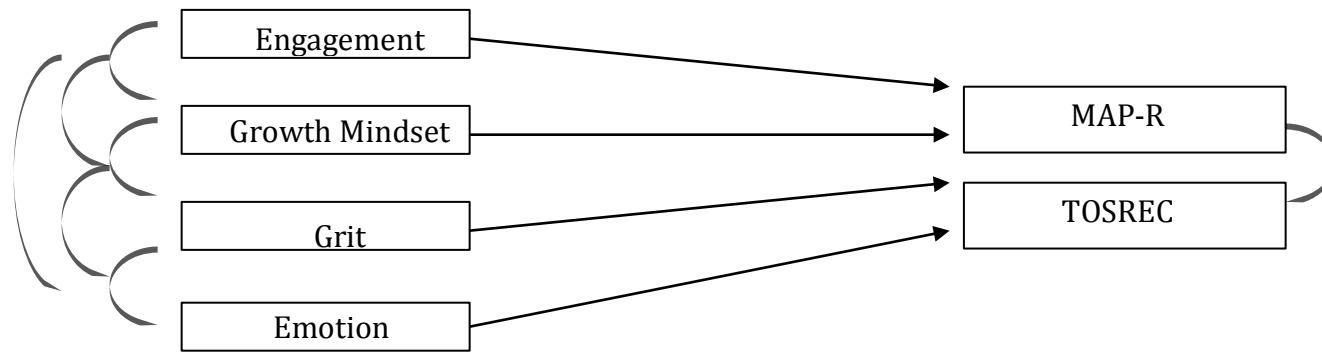


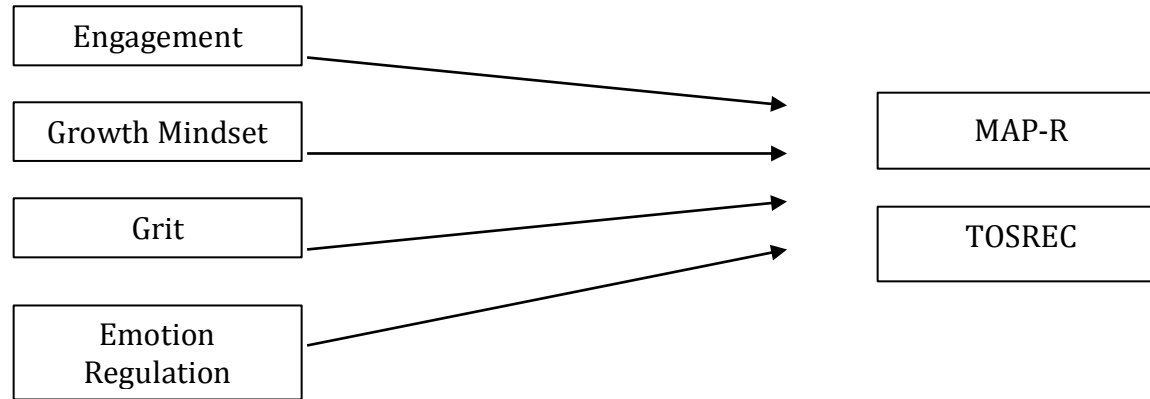
Figure 2. Socioemotional skills' relations with literacy achievement, with ethnicity as a moderator. The skills of engagement (a), growth mindset (b), grit (c), and emotion regulation (d) will be examined independently of one another. For the full sample, ethnicity will not be moderated.



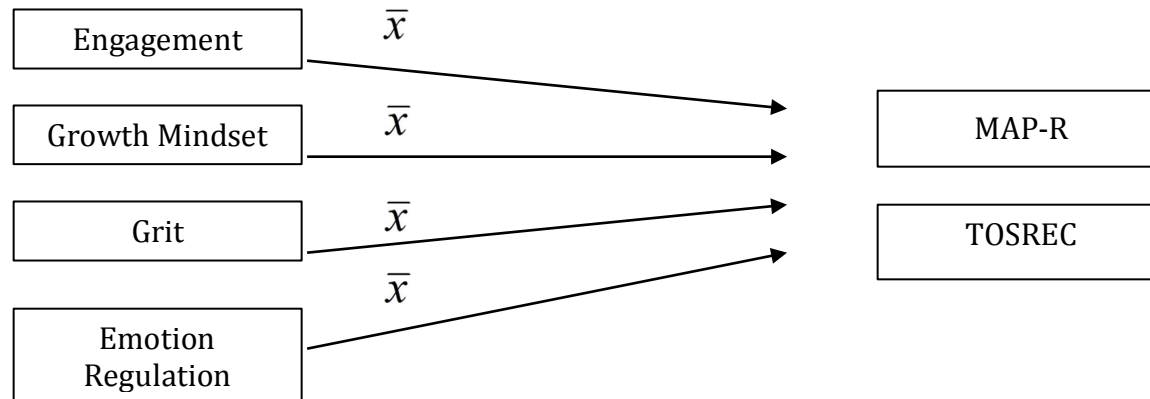
*Figure 3.* Full models' relation with concurrent literacy achievement.



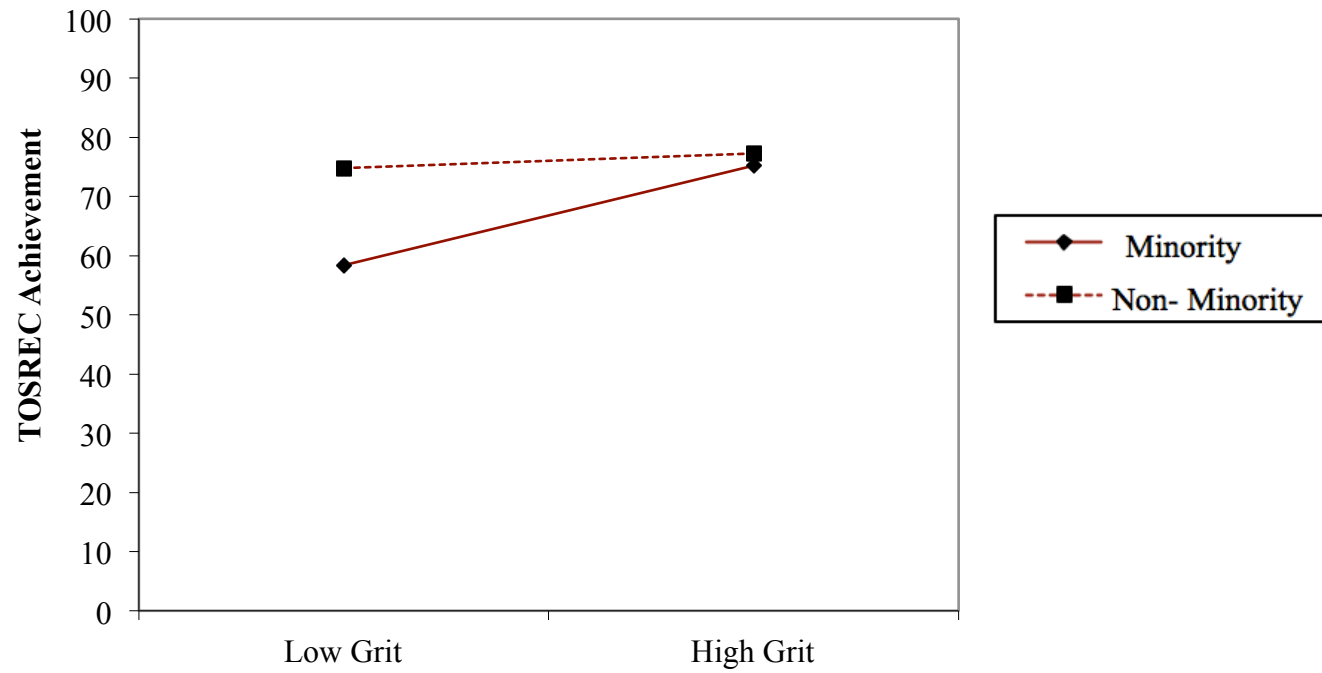
a.



b.



*Figure 4.* Comparison of model fit with ethnicity as a moderator. In the first model, the socioemotional skills may vary in their relation to literacy achievement (a), and in the second, nested model, the skills were constrained to have the same relation with literacy achievement. To do so, Mplus constrained the magnitude of the skills' estimates to the mean of all the estimate loadings (b). For the full sample, ethnicity will not be moderated.



*Figure 5.* Grit and unit increase in Test of Silent Reading Efficiency and Comprehension (TOSREC) Achievement, moderated by minority status. Low Grit = Mean – 1SD; High Grit = Mean + 1SD.

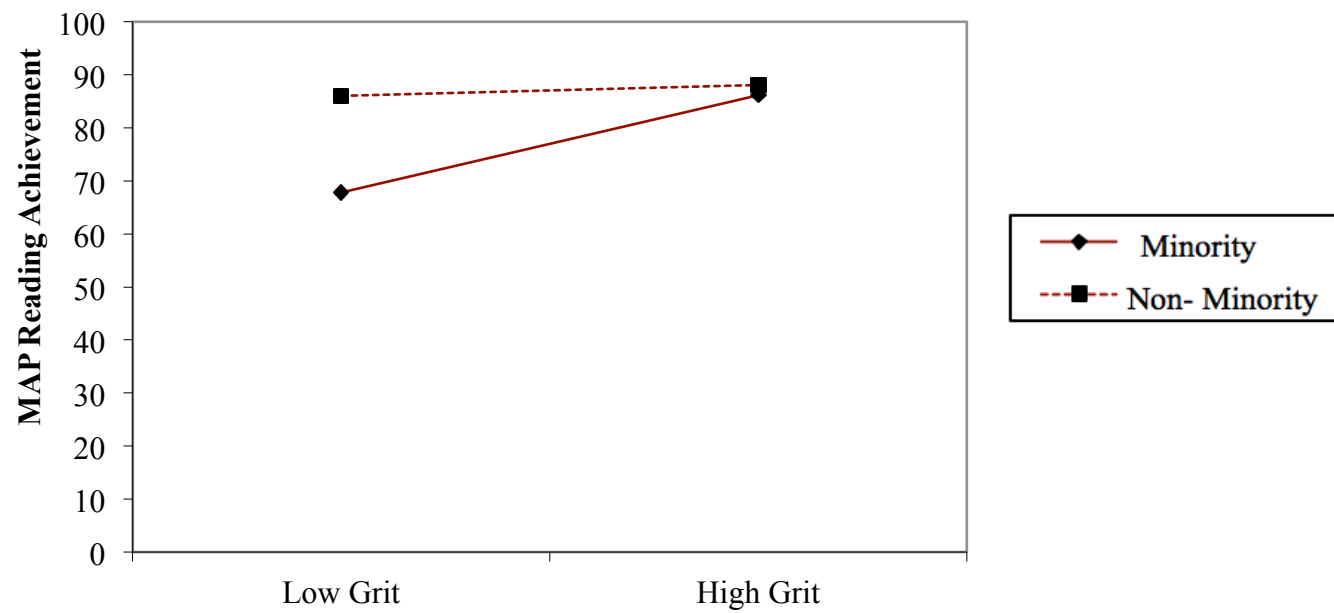
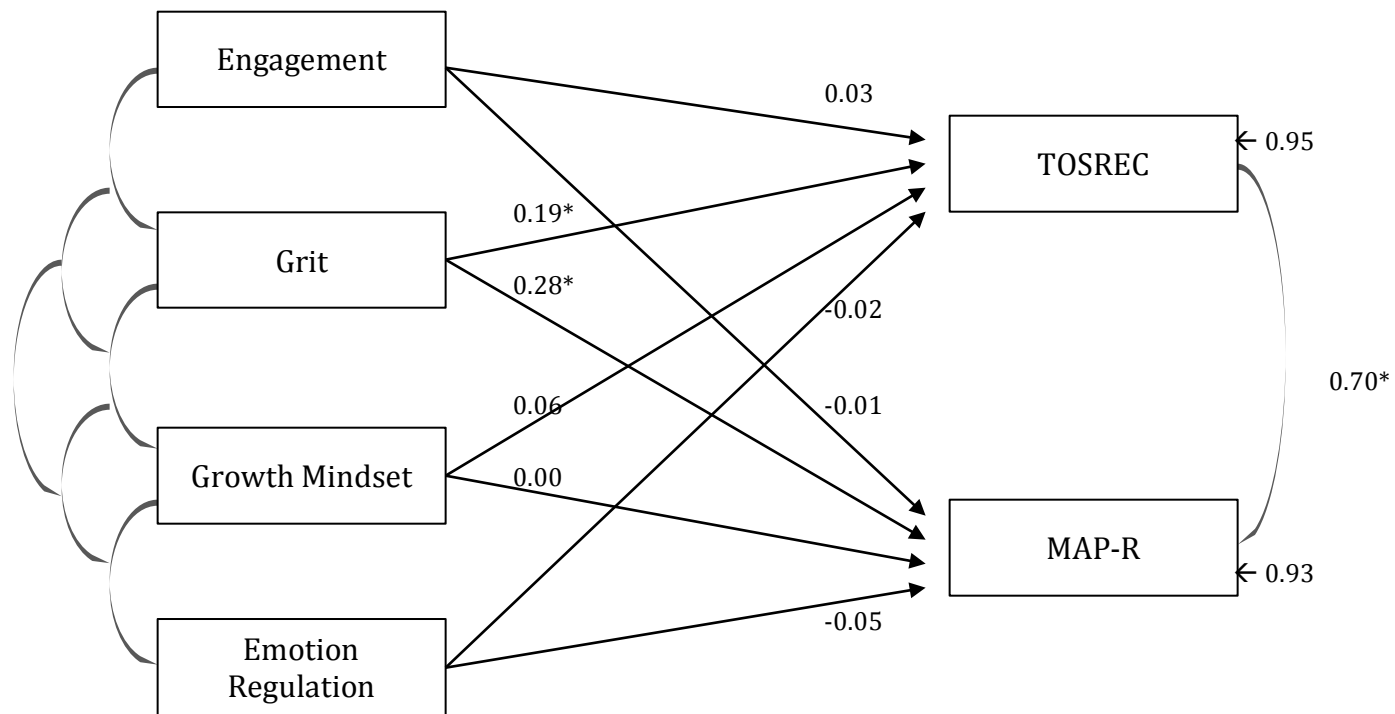


Figure 6. Grit and unit increase in Measures of Academic Progress - Reading (MAP-R) Achievement, moderated by minority status. Low Grit = Mean - 1SD; High Grit = Mean + 1SD.



*Figure 7.* Multiple regression in which socioemotional skills were regressed on the Test of Silent Reading Efficiency and Comprehension (TOSREC) and the Measures of Academic Proress - Reading (MAP-R) for the full sample. Using Mplus, measures of literacy achievement were automatically correlated with each other, and the socioemotional predictors were correlated with each other as well. \* $p < 0.05$ .

Appendix A  
*Demographic Information*

**Parent-Provided Demographic Question Items**

1. Teacher name<sup>a</sup>
2. Birthdate
3. Child Gender (Choose from boy or girl).
4. Language(s) spoken at home [please list all].<sup>b</sup>
5. Child race/ethnicity? (Choose from Black/African American, White/European American, Latino/Hispanic, Asian/Pacific Islander, Native American, Multiracial/Multiethnic, Other.)

**Child-Provided Demographic Question Items**

1. How old are you?
2. What is your race/ethnicity? (Choose from Black/African American, White/European American, Latino/Hispanic, Asian/Pacific Islander, Native American, Multiracial/Multiethnic, Other.)
3. What is the language you speak most at home? <sup>b</sup>
  - a. With whom do you speak this language (e.g., your parents, brothers, or sisters)? <sup>b</sup>
4. Do you speak any other languages at home (please list all)? <sup>b</sup>
  - a. With whom do you speak this language or languages? (e.g., your parents, brothers, or sisters)? <sup>b</sup>

*Note:* All demographic questions were optional to participants. Parent-provided information was collected via the parent consent forms. Child-provided information was collected in person before administration of the socioemotional questionnaires.

<sup>a</sup> Used to organize consent forms and confirm child's grade-level.

<sup>b</sup> Used to determine child's likely status as a first- or second-generation immigrant. When parent- and child-report did not agree, parent-reported information was used.

Appendix B  
*Socioemotional Questionnaire Items*

**Emotional Engagement** (Skinner et al., 2008)

1. When I'm in class, I feel good. *[Or, you feel happy and positive when you are in class.]<sup>a</sup>*
2. When we work on something in class, I feel interested.
3. Class is fun.
4. I enjoy learning new things in class.
5. When we work on something in class, I get involved *[Involved means you participate and work on the assignment or project happening in class]<sup>a</sup>.*

**Growth Mindset: Orientations to Failure Subscale** (Blackwell et al., 2007)

Instructions: When you read this story, pretend that it really happened to you and try to picture how you would feel and what you would do if it happened:

*You start a new class at the beginning of the year and you really like the subject and the teacher. You think you know the subject pretty well. When you take the quiz, you think you did a good job. Then the class gets their quizzes back and you find out your grade: you got an F, a failing grade.*

How do you think you would feel?

1. I would feel stupid.
2. I would feel sad or depressed.
3. I would feel angry at the teacher.
4. I would feel mad at myself that I didn't study more.
5. I would feel motivated, like I wanted to work harder at it.

What would you think was the main reason that you failed the quiz?

6. I wasn't smart enough.
7. The quiz was unfair, too hard for the class.
8. I'm just not good at this subject
9. I didn't really like the subject that much.
10. I didn't study enough.

What would you do next?

11. I would try not to take this subject ever again.
12. If I could, I would try to cheat on the next test.
13. I would spend less time on this subject and just work on the subjects I'm good at.
14. I would complain to the teacher or my parents.
15. I would work harder in the subject from now on.
16. I would ask someone for help with the subject.

**Grit-S** (Duckworth & Quinn, 2007)

1. My school work is difficult and makes me want to give up.

2. I get very interested in a new topic in school, but then I quickly get bored with it.
3. I am a hard worker in school.
4. I often set a goal in school but later give up and choose a different goal. *[Do you complete that first goal?]*<sup>a</sup>
5. It's hard to focus on schoolwork that takes a long time to complete.
6. I finish whatever I begin in school.
7. Other things sometimes distract me from what I am already working on in school.
8. I work steadily in school without giving up. *[Like, when you are working, you just keep doing it and are persistent.]*<sup>a</sup>

**Mindful Emotion Regulation** (O'Neal & Magai, unpublished manuscript)

*Think of a few times when you felt ANGRY or FRUSTRATED during the past month. When you felt ANGRY or FRUSTRATED over the past month, how often would you respond in these ways?*

1. When I was angry, I would take a few deep breaths before reacting.
2. When I was angry, I would calm myself down.
3. When I was angry, I wait before acting on my anger.

*Note:* Engagement, Grit, and Mindful Emotion Regulation items were rated on a five-point Likert-style scale, with 1=not at all and 5=very much. Growth mindset was rated on a six-point scale, with 1=disagree a lot, and 6=agree a lot.

<sup>a</sup> Questions in italics were used as follow-up questions if the child had trouble answering the initial question.